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THE SECTION ON DISEASES OF CHILDREN *

FRANK C. NEFF, M.D.

KANSAS CITY, MO.

Each year sees an increase in attendance at this section, demonstrating a rapidly growing interest in pediatrics. At the general registration any member of the American Medical Association may show his preference for this section by so indicating on the registration card. This is simple and democratic. It is desirable to have pediatrics brought to the notice of the profession at large, and to draw to our meetings all those who are interested in studying health and disease of children. The present plan of registration answers well for the above-mentioned purpose, but it could go farther for those who are devoting themselves to the specialty and who wish to have a more clearly defined active membership and a closer identification with this section. As a first step in carrying out this idea it would seem that the value of section membership would be greatly increased if there were available during the session and throughout the year a list of members, who in fact as well as in name belong to the section. In the course of a few years, this would grow into a complete roster of those active in pediatrics throughout the United States, as well as of those who are interested but not strictly engaged in the specialty.

The advantages of such a roster are obvious; more general information could be disseminated regarding the work of the section; the field of the organization in carrying out nation-wide plans would be widened; a more satisfactory acquaintance with our members throughout the United States would be possible; more members of the section would be interested in the *Transactions,* and an active membership could be made to include a regular subscription for this publication. Reprints of all papers read would be sent to all registrants of the section. Other benefits would undoubtedly accrue. As not all the papers read before the section may appear in THE JOURNAL, it would seem wise to make the necessary arrangements for printing in the *Transactions* all the papers approved for publication, and to provide so that authors who wish reprints can secure them.

INTEREST IN THE PROGRAMS OF THE SECTION

The secretary and the chairman are authorized to select the essayists and the best material for presentation. The choosing of the few for whom there is room on our program has become a difficult matter. The officers should have the time and means for becoming acquainted with all the meritorious work that is being done throughout the country. Some provision should be made for ascertaining the progress and needs which are peculiar to the various sections of the country and for their presentation before this section. Perhaps sufficient variety is not always obtained in subject and personnel from year to year. In planning the programs, the subject in previous years should not be repeated unless definite progress is represented. There should be rules as to how often a member may present a paper, so as to give an opportunity to all who have something of interest to offer. Valuable data regarding programs and section work should be kept in a secretary's book, the property of the section, and handed down from one administration to the next.

The officers this year found more good material than it would ever be possible to present in three half-day sessions. It seems to the chairman that the papers offered for the section should be sent to the secretary three months before the annual session, to be selected and approved by the executive committee. This would permit a selection which would carry out the purpose of the program for the current year; those which are deemed not suitable for reading before this organization would be released; and there could be retained for presentation in succeeding years those acceptable papers in excess of the twenty-one allowed by the Association. This would make much easier the planning of the program, and would avoid the embarrassment now felt in the occasional rejection of certain papers after they have been read to the section.

We will find a stimulus and interest in the presence of foreign guests at our sessions. The visit of Dr. Armande de Lille at the Chicago session was much appreciated by those in attendance and added to the fraternal spirit for our colleagues in France. In the course of a few years we will add to our better acquaintanceship those representatives who come from the countries across the seas as well as from Canada, Mexico and South America.

Many interesting subjects could be handled in the time and place now developing in the scientific exhibit, which should be announced in our program and should be included in our bound *Transactions.* Pediatric departments of universities, and public and private clinics have been doing work, the methods and results of which can be demonstrated in this exhibit and made of equal interest to that of the section papers.

DEVELOPMENT OF PEDIATRIC RESEARCH

It is true of the younger men in medicine and of many who are teaching that their incomes sometimes prevent them from obtaining sufficient time or resources

* Chairman's address, read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

for following special study which would be richly productive. A monetary contribution could be made from a fund which would be devoted to this as well as to other purposes needful to our section. Such a fund could well be named the "Abraham Jacobi Pediatric Fund." The secretary of the section will need an appropriation to cover the ever increasing expense of his office. There are occasions when our section might considerately offer to bear at least a portion of the traveling expenses of a guest, or that of a presentation of pediatric work in the scientific assembly.

CREATION OF A PEDIATRIC FUND

Subscriptions to this fund should be voluntary, and the individual amount could be placed at five or ten dollars per year until such time as more or less is needed. The executive committee or a special committee including the section secretary as a member should act as custodians of the fund. Dispersals should be made by the cooperation of the executive and special committees.

SUMMARY

It is suggested that the following changes be made in our organization:

1. *Membership.*—(*a*) Active: Those pediatricians who have signed a special application furnished by the secretary of the section are to be registered in an active roster kept by the section, and will be contributors to and beneficiaries of a fund for the special purposes of the active organization.

(*b*) Attending: Those who have indicated in the general registration that they wish to attend and take part in the section meeting.

2. *Preparation of Programs.*—(*a*) All papers offered for presentation to be in the hands of the secretary three months before the date of the annual session, those desirable to be selected by the officers and the executive committee.

(*b*) Programs to be planned by elimination of subjects which have been exhaustively presented in former years; a general policy to be outlined for the current year as well as a tentative outline for three years in advance so as to cover the field of pediatrics.

(*c*) Invitation of guests to take part in discussions.

3. *Creation of a Fund.*—(*a*) Establishment of a contributing fund known as the "Abraham Jacobi Pediatric Fund" for use by the section in furthering scientific research, in meeting expenses occasioned by the assembling of scientific pediatric exhibits of work, in aiding worthy individual efforts during the year, and for use by the secretary's office for printing, mailing of reprints and subscription to the annual *Transactions*.

(*b*) A special committee to be created or the executive committee to be authorized to act as custodians and disbursers of this fund, and the secretary's duties to be enlarged to meet the increased functions devolving upon him.

Your chairman offers these suggestions for your consideration. If you think them practical he will gladly assist as a member of the executive committee in working out the details, in conformity with the rules and in consultation with the general officers of the American Medical Association.

Development of Science.—In the development of all sciences there is a general tendency to substitute for vague generalizations definite and specific inquiry in special fields.—Paton.

PHYSIOLOGY OF THE BLOOD IN INFANCY AND CHILDHOOD*

WILLIAM PALMER LUCAS, M.D.
SAN FRANCISCO

During the last ten years there have been few subjects in medicine which have received more careful consideration than has the study of the blood. Previous to this period most of the studies were confined to a purely morphologic description of the various types of cells, and our original conceptions of most blood conditions were based on these studies. Modern methods of biochemistry and physiology have introduced an entirely new conception of the value of blood studies, not only in the understanding of anemias, either primary or secondary, but also in the study of many other diseases. A true value of the function of the kidneys can be better appreciated through a study of the blood than by a study of the urine. In the same way some of the newer methods of analyzing the blood throw light on diseased conditions in other organs, such as the liver and lungs, and on the complicated problems connected with digestion.

Barcroft has pointed out that any disturbance which interferes with the oxygen-carrying ability of the red cells must have far reaching results. These results, as the loss or diminution of hemoglobin or the interference with its function in any way, are usually grouped among the anemias; but it is not to be assumed that anemias are not also due to interference in the production of red blood cells. The carrying of oxygen by the cells depends on a number of different factors, the age of the cells, and the condition in which they are extruded from the blood-forming organs. These and probably other factors, such as the rate of circulation, undoubtedly play a part in the amount of oxygen which the cells are capable of carrying.

Means has lately pointed out that the cells also have to do with the transport of carbon dioxid and, though in anemias the ratio of cells to plasma is disturbed, the cells still are the main carriers of carbon dioxid, the plasma content of carbon dioxid remaining constant.

Hemoglobin may be present in quantitatively sufficient amounts and yet the oxygen be unable to be carried or given off in sufficient amounts to satisfy the needs of the tissue cells throughout the body. An example of the inability of the red blood cells to give off oxygen, even though hemoglobin is present in normal amounts, is shown in the condition produced by simple cold. Another example is the presence of abnormal salt concentrations of the plasma. Exactly how these two factors of temperature and general salt contents of the plasma affect affinity of hemoglobin for oxygen is not well known. That the amount of oxygen that can be taken up and the rapidity with which oxygen can be given off varies with the temperature of the body is an important factor in temperature regulation in early infancy. All of us who have watched new-born infants with disturbed temperature regulation have noted the cyanosis which occurs in these infants with a low body temperature.

The fact that hemoglobin is a colloid and the knowledge we have of the interrelation of electrolytes and colloids make it evident that the salt contents of the blood must affect and regulate to a certain extent the

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

transfer of oxygen. It has been shown that potassium salts are capable of causing hemoglobin to absorb oxygen to some degree. Many studies have demonstrated the fact that the loss of water with the resulting concentration of salts affects the oxidation of the body. The buffer quality of these salts undoubtedly affects the oxygen transfer from the hemoglobin to the cells of the body. This is, as we know, intimately connected with another factor, the hydrogen ion concentration of the blood. It is well known that increasing the acidity of the blood lessens its active concentration of oxygen. An increased acidity of only one part in each 100,000,000 affects immeasurably the concentration of free carbon dioxid and in this way affects directly the ability of hemoglobin to unite with oxygen. The importance, therefore, of studying the relation of hemoglobin to these three factors, temperature, electrolytes and hydrogen ion concentration, is indicated in the study of almost all blood diseases.

DESTRUCTION OF RED BLOOD CELLS

The morphologic study of blood furnishes very valuable data as to the condition of the blood-forming organs. Normally the blood level is kept up by daily destruction and replacement of cells. It has been estimated that from one tenth to one fifteenth of all red blood cells are daily destroyed, as estimated by the daily excretion of this amount of hemoglobin derived pigment. However, Ashby has recently determined, by estimating the disappearance of cells transfused by the differential agglutination test, that the normal life of the red blood cell is about thirty days. Destruction is continually carried on by the following processes:

First, by phagocytosis. The endothelial cells in the spleen, liver and other organs take part in the process.

Second, by fragmentation. This is shown by the occurrence of microcytes and poikilocytes. Fragmentation is produced in the circulation and not in the bone marrow. Normally there are a few such cells always present in the circulation, but under pathologic conditions, when young cells are thrown out in large numbers, these young cells cannot stand the functional strain put on them and become easily fragmented. Under pathologic conditions, not only fragmenting cells but also cells with vacuoles may be found. These finally become hemoglobin dust. They are removed from the circulation and appear in the spleen. Such hemoglobin dust is found in normal spleen, but it is found in much larger quantities in anemic conditions.

Third, by hemolysis. Under normal conditions this probably plays very little part, as hemolysis is normally an intracellular process; but in pathologic conditions it may play a big part. Under such conditions hemoglobinuria occurs, often accompanied by fever and chills.

Fourth, the increased fragility of the red blood cells. This is especially found in certain pathologic conditions, such as congenital hemolytic icterus, in which there is pronounced blood destruction.

REGENERATION

Processes of regeneration are also continually going on. Normally, the bone marrow produces only enough red blood cells to maintain the daily loss of red blood cells in the normal wear and tear of life. Bone-marrow activity is limited only by its functional capacity. This may be hyperstimulated under certain conditions, as by a diminished oxygen supply such as that found in high altitudes, or where there is difficulty in the absorption of oxygen through the lungs, as in congenital cardiac conditions. Whether this changes the blood reaction toward the acid side, which in turn stimulates the bone marrow is not clear, and whether the products of red blood cell destruction, that is hemoglobin, stimulates the bone marrow, is not certain. With the destruction of the red blood cells there is an increase in the lipoid constituents, or it may be an increase in the complement-like substances; but what part these play in the stimulation has not been decided.

Bone-marrow activity is normally a balanced process between blood destruction and blood regeneration. Certain tests can be carried out to determine how this balance stands out at a given time. First, urobilin estimations in the urine and stools can be used to estimate the presence or the extent of blood destruction. Second, by means of vital staining, such cells as the Howell-Jolly bodies, Cabot's ring, and stippling can be made out. These may give some idea of the effort which the bone marrow is making in the production of blood and in its effort to maintain the optimum level. Third, such an estimate of the effort which the blood-forming organs are making may better be done perhaps by estimating the number of (1) reticulated cells, (2) platelets, and (3) mitochondria, all of which can be determined by special staining methods. These are signs of bone-marrow stimulation. Normally reticulation exists in from 0.5 to 2 per cent. of the red blood cells. With marked bone marrow activity this percentage is increased. In simple anemia it usually does not go higher than 4 or 5 per cent. In hemorrhagic jaundice one finds reticulated cells as high as from 15 to 20 per cent., and after hemorrhage this may be even higher, from 20 to 30 per cent. The percentage of reticulation is therefore of great diagnostic value, taken in conjunction with the general condition of the patient. As the reticulated cells diminish after hemorrhage, it can be considered as a good prognostic point. The estimation of platelets also gives us an idea of the activity of the bone marrow. They are increased where there is marked activity and decreased where there is a defective regeneration. In diseased conditions where they have been reduced, their return to normal may be a favorable sign.

Mitochondria are small lipoid bodies found within the cell protoplasm, which can be demonstrated by some of the newer stains. They are not found in adult or fully formed red blood cells, but are found in nucleated red or immature red blood cells; therefore their presence and estimation give us some idea of the number of the immature cells in circulation.

It has been shown that oxygen consumption may be proportional to the percentage of reticulated cells. Normally, human red cells consume very little oxygen. In anemia the consumption of oxygen by the red blood cells may be marked; and this depends on the presence of young cells, not that of the full grown erythroblasts. The demonstration of an increased oxygen absorption by accurate methods may prove a more quantitative index of functional variations in bone-marrow activity than the microscopic evidence taken alone.

It has been pointed out that there is a certain diurnal change in the amount of hemoglobin in circulation

which normally is about 10 per cent., but under pathologic conditions may be as high as 30 per cent. The highest hemoglobin estimations are between 9 and 10 in the morning, and the lowest between 6 and 7 in the evening. These variations must be considered in connection with the change that is taking place in the blood and circulation, in the pulse rate, and rate and volume of absorption, and possibly with the fluid absorption or kidney excretion.

In any study of the regeneration of hemoglobin and red blood cells it is important that the determination of hemoglobin percentage be as accurate as possible. Various investigations with the ordinary methods of testing hemoglobin have shown that they give an error of from 5 to 20 per cent. The newer methods of estimating hemoglobin are based on the oxygen capacity of the red blood cells. Various methods for estimating the oxygen capacity have been worked out by van Slyke and Hoppe-Seyler, and lately Palmer has published a method which is the most accurate one we have for determining hemoglobin percentage and oxygen capacity of the hemoglobin. Robscheit has modified this somewhat and determines the hemoglobin in the form of acid hematin. Some such method as that of Palmer or Robscheit should be adopted for all clinical purposes for the determination of the hemoglobin, as accurate estimates are much to be desired in the study of blood regeneration and destruction.

PIGMENT METABOLISM

The study of hemoglobin pigment metabolism is also important. The liver has not only an eliminative function in forming bile pigment from the freed hemoglobin of broken down red blood cells but, as shown by Whipple, it has a constructive function also. The bile pigment is excreted into the intestines; reduced to urobilin or stercobilin; some of this is reabsorbed to be again thrown out or destroyed, or it may escape into the circulation and appear in the urine. Whipple has shown that the liver can construct bile pigment probably from its endothelial-cell activity, and under certain conditions there may be extrahepatic bile pigment production. Furthermore, these experiments have demonstrated that diet definitely affects the amount of pigment function or output, being increased on a carbohydrate diet and decreased on a meat diet. In other words, the liver endothelial cells can build up pigment, and the urobilin complex, postulated by Addis in the bile circulation theory, may not be the only way that hemoglobin is built up. The liver has some constructive function in hemoglobin regeneration, and it can be modified by diet as can bile pigment regeneration. The liver can construct hemoglobin out of other material than broken down red blood cells. Undoubtedly, the pyrrol complex is a peculiar feature of the hemoglobin molecule. The production rate of hemoglobin can be affected by diet. Not only elements of protein catabolism but also certain factors in the diet contribute to the steady construction of hemoglobin regeneration. Liver-cell activity has to do with hemoglobin or blood-pigment metabolism. On the functional activity and integrity of the liver cells not only depends the level of bile pigment and hemoglobin production in the body, but it has to do with the maintenance of a normal level of plasma and serum proteins. Liver function in this respect is influenced not only by tissue catabolism but also by diet. As has been stated, the rate of hemoglobin destruction may be estimated by estimating the urobilin in the stools and urine. In the urine it may be increased when there is no marked destruction of hemoglobin or red blood cells, but it may indicate a poorly functioning liver where the urobilin is not removed from the blood and appears in the urine. This may be tested by some of the newer methods of estimating the urobilin in the blood serum. It gives an estimate of liver function.

In the diagnosis of various types of liver disturbance either before urobilin appears in the urine or before there is icterus, it must be present for some time in the blood serum, and in amounts that are often below the level of kidney appearance or icterus. For the reason that urobilin may occur in the urine in conditions other than those associated with excessive blood destruction, stool and urine and blood serum determination of urobilin must be made. The hepatic origin of urobilin under certain conditions must be borne in mind. In any case the figures for urobilin in urine and stool should be compared with the normal standard.

Lately another method for estimating blood destruction has been suggested by the injection of sterile hemoglobin solution. The tolerance or lack of tolerance is shown by the appearance of hemoglobinurea in cases showing evidence of blood destruction. The test may be of quantitative value, as the amount of hemoglobin needed to induce hemoglobinuria is directly proportional to the degree of blood destruction, and the tolerance of hemoglobin may be shown to be low in conditions which are usually accompanied by increased elimination of urobilin.

FUNCTION OF THE SPLEEN

The function of the spleen in regard to regeneration and destruction of blood has been under much discussion. The facts regarding the position of the spleen in regeneration are as follows: It is known that during fetal life the spleen has the function of forming red blood cells and that under pathologic conditions the spleen may take on this function especially in the production of myeloid cells. There has been much discussion as to whether the removal of the spleen in certain blood conditions is of value because it affects blood destruction or because it affects the formation of blood. Usually there is an anemia following splenectomy. This may be due to a diminished activity of the blood-forming organs. This is borne out by the fact that after splenectomy there is less rapid blood regeneration in the splenectomized animal. The spleen probably affects the activity of the bone marrow, normally exerting a stimulating effect. It has been shown that after splenectomy the bone marrow increases to take over the function of storing and elaborating the iron of the old blood pigment. There are certain facts, however, which point to the spleen as taking part in blood destruction. After splenectomy, red blood cells show increased resistance to various lytic agents, hypotonic salt solution, and the mechanical effects of shaking. The spleen probably has to do with the normal destruction of worn-out red blood cells. However, it must be remembered that the removal of a normal and of a pathologic spleen may differ in what they demonstrate. In a pathologic spleen the removal may cause hemolysis and depress bone-marrow function, whereas splenectomy of a normal spleen causes anemia by taking away the normal stimulus to blood formation. Furthermore, it must be remembered that the spleen is only one organ among many which have to do with blood formation,

and also that these organs, the liver, lymph nodes, bone marrow and spleen, all have interrelations which are important.

DESTRUCTION OF LEUKOCYTES AND LYMPHOCYTES

Degenerative processes of the leukocytes are much harder to determine: what becomes of them is not yet clear. If one follows cases in which there has been marked leukocytosis, often signs of nuclear changes, granulation, vacuolation, fragmentation and fragility, and changes in the protoplasm, will be seen. A result of leukocytic breakdown is found in an increased uric acid content of the urine, as can be shown in leukemia when there is a sudden drop in the leukocytic count.

There is still less evidence of what becomes of the lymphocytes. We know that certain substances, such as benzine, radium, and roentgen ray, cause a destruction of lymphocytes as well as leukocytes, but, even where they diminish rapidly in the blood following treatment by this means, it is hard to recognize how they disappear or disintegrate.

COAGULATION

Coagulation may be defined as the colloidal change which occurs under the influence of calcium electrolytes, during which the blood is transformed from the fluid state into the solidified state, which we recognize as coagulated blood. The changes which take place during this process are now more clearly understood, because the various factors which enter into them have been made capable of separate analysis. Coagulation of normal blood may be divided into three stages. Of the first stage very little is known except that certain definite changes take place during a very short period of time. The second stage, which is the formation of thrombin, depends on the reaction between two substances, cytozyme and serozyme, the one obtained from the cellular elements, and the other from the plasma, acting in the presence of calcium salts to form thrombin, which, in turn, during the third stage, combines with fibrinogen to form the fibrin clot. It can now be clearly demonstrated that the factor fibrinogen is disturbed in conditions primarily affecting the liver. Calcium itself is rarely affected except in those cases in which there is a sufficient quantity of bile salts in circulation to combine with the calcium salts, thus rendering them unavailable for combination with the serozyme and cytozyme.

The factor concerning which we know the most is that derived from the cells, particularly the platelets. There are two main conditions in which there is marked disturbance of this factor. In purpura hemorrhagica there is a deficiency in the number of platelets. When the platelet count falls below 100,000 we are in the danger limit; when it falls below 20,000, hemorrhage from lack of platelets will occur. In hemophilia, and in the ordinary case of hemorrhage of the new-born, there is a qualitative change in the platelets or their product, prothrombin. The total number of platelets may not be diminished, though qualitatively they may be so changed that hemorrhage may occur at any time. In hemorrhage of the new-born this is a temporary condition, which usually passes away within a very short time. We have been able to show from experimental work on the blood of the new-born that there is, during the first few days of life, a definite qualitative defect or, perhaps better, a lack of equilibrium in the prothrombin elements. In hemophilia, the condition is hereditary and constantly present, whether there is bleeding or not. There are certain other types of hemorrhage of the new-born, such as that which occurs during acute septic infection of the new-born, in which the antithrombin, which Howell has demonstrated, is the main factor at fault; and there are certain other cases of liver injury, as demonstrated by Whipple, in which the fibrinogen is at fault; but the usual cases of hemorrhage of the new-born, and certainly those which respond to blood transfusions, are those in which the prothrombin element is affected. Just what is the underlying cause of this lack of balance in the prothrombin element in the new-born has not yet been demonstrated.

The fact that the life of the blood platelet is approximately only four days, which is a very much shorter period than that of the other cellular elements of the blood, explains the reason why the value of transfusion in hemophiliac conditions is so short-lived. As soon as the transfused platelets disappear, the primary condition returns. Some permanent effect on the prothrombin element has been obtained by feeding cephalin or thromboplastic substances to hemophiliacs. This line of treatment we feel offers the best permanent results in the treatment of true hemophiliac conditions; whereas direct transfusion in the temporary disturbance of prothrombin in the new-born successfully cures this condition, as the prothrombin factor reaches its normal level probably by the end of the first week. This explains very clearly the success which transfusions have given in these cases of hemorrhage of the new-born.

THE TIME ELEMENT

It is important to determine the coagulation time by proper methods. The ordinary methods of determining coagulation time by obtaining the blood from puncture wounds is open to grave objections. Unless the blood is derived directly from the vein, tissue juices are mixed with the blood, and so definitely affect the coagulation time that a true picture is not obtained. If the blood is drawn from a vein under proper conditions and tested, the normal coagulation time averages from six to twelve minutes; anything over twenty minutes can be taken as meaning definitely delayed coagulation.

If at the same time the sample of blood is oxalated, its recalcifying time will give an accurate picture of the prothrombin element. These two tests, coagulation time and prothrombin or recalcifying time, should be tested in all hemorrhagic cases. A further simple test is that of bleeding time, which is estimated by making a fresh cut in the finger or the lobe of the ear so that the blood flows drop by drop. The blood is taken up on absorbent paper at intervals of thirty seconds. In this way, each drop will give the amount of blood shed in the given interval. The total duration from such a bleeding point will be the bleeding time. Normally, bleeding time varies from one to three minutes and is independent of the coagulation time. For example, in purpura hemorrhagica the coagulation time is usually normal but the bleeding time markedly prolonged, whereas in hemophiliac conditions the bleeding time may be normal but the coagulation time is markedly prolonged.

As has been stated, fibrinogen, calcium and antithrombin are much less often affected unless there is liver derangement or destruction. Calcium is rarely diminished in quantity, and the giving of calcium, there-

fore, except in cases of marked jaundice, does not in any way affect coagulation. These studies have clearly demonstrated why so few results have been obtained from the administration of calcium, even in large quantities, in the ordinary hemorrhagic conditions.

THE CHEMICAL METHOD OF STUDY

At the present time, there is a great deal of work being done in studying the blood by the chemical methods. The impetus to this work rests on the introduction by Folin of the microchemical methods of studying small samples of blood, and almost every week new methods of study are being brought out. I shall not attempt to describe any of the various methods, but I shall describe some of the results of these studies and their application to a better understanding of disease, which should be considered if we are to understand the blood as a tissue that is capable of very intensive investigation, and which will lead materially to a better comprehension of normal and diseased conditions, not only those connected with the blood itself or blood diseases, but also disease as it affects other organs.

VARIATIONS IN BLOOD PROTEINS

Most of these studies have been carried on in relation to kidney conditions and to diabetes. It is of interest to note that, in certain nutritional conditions, the blood proteins vary materially. Whereas, normally the blood proteins vary from 7 to 8 per cent. in the normal adult, this level during the first year is from 6 to 6.5 per cent. In cases of malnutrition it may be reduced to between 4 and 5 per cent. The same may be true of the blood protein of premature infants, whereas, in diarrheal conditions during infancy the blood proteins may rise to 8 or 9 per cent.

Whipple, in his studies on blood serum protein regeneration under certain conditions of depletion and intoxication, has found that, where the serum protein is depleted to 1 per cent., this appears to be the absolute minimum below which the body cells cannot survive. When 2 per cent. is reached this is found to be a dangerous level of depletion. These experimental findings of Whipple agree very closely with those of Utheim in infants suffering from athrepsia or malnutrition. It is important, therefore, in these cases of malnutrition, to estimate the amount of blood proteins present, and, as Whipple has pointed out, there is marked similarity between the parenchymatous regeneration and blood serum protein regeneration. Whipple suggests that it may very well be that the protein for the parenchyma cells or the protein for the blood plasma may require similar construction periods and building material, and it may be that the blood protein construction depends on the activity of the cell protein. This regeneration period in chloroform poisoning, in which the liver is injured, takes from seven to ten days. These studies are very suggestive and throw considerable light on both the prognosis of nutritional conditions and the progress of the condition, if the proteins can be followed for their regeneration or lack of regeneration. And Utheim has pointed out that, in some of these nutritional conditions in which the blood proteins are reduced to the danger limit, repeated transfusions of comparatively small amounts of blood will often assist in tiding over very critical nutritional periods by raising artificially the blood protein level, thus giving an opportunity for the body cell metabolism to function from a better metabolic basis.

IMPORTANCE OF STUDYING BLOOD SUGAR

The importance of studying blood sugar has been clearly demonstrated in the study of diabetes; and it is well recognized today that the excretion of sugar by the kidneys is a sort of safety valve factor of the body. The real condition which needs careful attention is the hyperglycemia. The importance of this is shown in that, as diabetes advances, glycosuria becomes a less and less safe criterion of the stage of the disease, since the permeability of the kidneys for sugar is greatly lowered, especially as nephritic symptoms appear; and the blood sugar is a far better criterion of how the condition is progressing. Of further importance in the study of diabetes from a prognostic as well as from a therapeutic standpoint is the hydrogen ion concentration of the blood. This is especially true as an index of present or approaching acidosis; for the blood sugar and alkali reserve in the body are important as determining factors, and as indicating how the disease is progressing.

THE CARBON DIOXID CONTENT

The carbon dioxid content in the blood is composed of two parts: that in simple solution (or as carbonic acid, H_2CO_3), and that chemically combined as bicarbonate, ($NaHCO_3$). The amount in solution depends entirely on the tension of carbon dioxid to which the blood has been exposed and can be calculated directly from this solubility coefficient of the chemically combined carbon dioxid existing as bicarbonate. Hemoglobin plays a large part in the equilibrium of carbon dioxid, and in the acid-alkali equilibrium. In cases of severe anemia, it has been shown that the respiratory center is controlled by the reaction of the tissue fluids in the respiratory center. This is dependent on the carbon dioxid tension; and this tension in the tissues must exceed that of the arterial blood, and must be higher than in the venous blood. In anemia the carbon dioxid carried from the tissues, for each change in tissue tension, is less than normal, as has been pointed out by Peters; and, unless the blood flow is increased, this will result in an accumulation of the carbon dioxid within the tissues. With each increase in carbon dioxid tension, the hydrogen ion concentration rises relatively rapidly. In severe anemia, there is a tendency to accumulation of carbon dioxid in the tissues, a diminished ability of the blood to lose carbon dioxid in the lungs, and relatively rapid change in the hydrogen ion concentration with any change in the carbon dioxid tension.

All these factors tend to excite the respiratory center and produce dyspnea. This is, in particular, caused by the low hemoglobin, and therefore changes in the carbon dioxid tension produce considerable change in the hydrogen ion concentration.

PHYSICOCHEMICAL EQUILIBRIUM

Henderson has pointed out that there are six variables involved in a single physicochemical equilibrium, and that a knowledge of any two of these will give an estimate of the acid-base equilibrium of the blood. It has been pointed out by Means and his co-workers that acidosis may be compensated or decompensated, and it is important to determine which of these two states exists. This is valuable not only from a prognostic standpoint, but also from the standpoint of treatment; for in a compensated acidosis, though the alkali of the blood may be diminished on account of an increase of the nonvolatile acids in the blood, it may have a normal

reaction and the acidosis be compensated. In such a case, alkali therapy may not be indicated and at times may do more harm than good; whereas, in a decompensated acidosis, alkali is necessary to change the reaction of the blood. In such cases, however, the equilibrium may be pushed too far to the alkali side, and alkalosis occur unless care is taken. We may have either a condition of acidosis compensated or acidosis decompensated, or the opposite may occur; a compensated or decompensated alkalosis. Furthermore, Means has pointed out that in certain conditions, such as pneumonia, the buffer of the blood may be normal but the reaction more acid than normal, owing to a carbonic acidosis. In such a case, the condition is probably due to the fact that the pulmonary ventilation is insufficient to preserve the normal ratio between the soluble carbon dioxid or bicarbonates, and the blood is not getting enough carbon dioxid out. It is important, therefore, not only to estimate the reaction of the blood but also to estimate the available alkali; and it is the estimation of these factors that establishes the compensated or decompensated acid-base equilibrium.

PHENOMENA OF ACID INTOXICATION

Since the introduction of simple methods for estimating the carbon dioxid combining power of the blood, much light has been thrown on the phenomena of acid intoxication. Acidosis may result either from the overproduction of acid bodies or by their decreased elimination. The normal slightly alkaline reaction of the blood is maintained by the influence of the bicarbonates, phosphates and proteins of the blood. The carbonates may be considered as a first line of defense. During acidosis other acids combine with the carbonates and lower the body's alkaline reserve. Under normal conditions, the kidneys are able to secrete an acid urine from nearly neutral blood through the medium of acid phosphates, which may be considered as the second line of defense; and it is this line of defense, the acid phosphates, which breaks down in the acidosis of nephritis, with an increase in the nonvolatile acids and a diminished available supply of alkali. Testing the amount of acetone and diacetic acid in the urine does not give very much indication as to the severity of an acidosis. The estimation of the carbon dioxid combining power of the blood gives this information much more accurately. This is especially true in following the treatment of diabetes by the Allen method. In severe nephritis, the retention of nitrogen and of acetone often accompany each other; and this type of acidosis is more easily corrected by alkaline treatment than the acidosis of diabetes, in which fasting will often check the acetone body formation, and so affect the acidosis much more readily than it is affected by giving alkali.

The acidosis found associated with severe diarrhea of infancy is not due to the presence of acetone bodies but rather to the deficient excretion of acid phosphates by the kidneys. In such cases administration of sodium bicarbonate will often correct the characteristic symptoms and give normal blood tests for alkali reserve. Notwithstanding this, the child may die. Undoubtedly in such cases the nutritional metabolism of the cells themselves has been disturbed, and simply correcting the blood alkalinity is not sufficient to restore the cellular equilibrium. The importance of these blood studies is that, by repeated blood tests, we are able to arrive at a more accurate knowledge of the internal metabolism early enough to correct it; whereas, if we wait until definite symptoms appear, even the most approved treatment will not check the process sufficiently to save the patient.

In nephritis the study of the nonprotein nitrogen in the blood becomes important, giving a better indication of kidney function than almost any other of our functional tests, from both the prognostic and the therapeutic standpoint. This statement is perhaps more correct for chronic nephritis than for acute nephritis.

In acute conditions, elimination of salts is, as we have learned, just as important. The retention of chlorids resulting from conditions of lowered permeability of the kidneys and the retention of phosphates in the blood have a great deal to do with the production of acidosis. Where the phosphates are greatly increased, the calcium content is greatly decreased and acidosis may result. In parenchymatous nephritis, the retention of salts is greater than that of the nonprotein nitrogen elements. The nonprotein nitrogen composition of the blood, although is constitutes only 1 per cent. of the total nitrogen of the blood, is more important because the nonprotein nitrogen factors show both the anabolic and catabolic processes more than the protein nitrogen, or at least they give us a better insight into what is going on, and variations from the normal in the nonprotein elements often aid us in appreciating what is really happening. It has been shown by many studies that the various constituents of nonprotein nitrogen have different origins. Urea is largely endogenous, while uric acid is partly endogenous and partly exogenous under normal conditions of diet and health, and creatinin is almost entirely endogenous. Urea is produced mainly by the liver as a result of the deaminization of amino acids produced during digestion which are not used immediately by the blood. Uric acid, on the other hand, is the result of enzymatic transformation of the aminopurins and oxypurins. Creatinin is supposed to be formed in the muscle from creatin.

The distribution of these nonprotein nitrogen constituents varies greatly in the blood and urine. The percentage of uric acid in normal blood is greater than in urine, while the urea is much lower. In the case of creatinin and ammonia, it is very much lower. The kidneys remove creatinin and ammonia with great ease, whereas it is not so easy to remove uric acid. This explains why, in any altered function of the kidneys, the blood first shows a retention of uric acid, then urea, and lastly creatinin.

UREA OF BLOOD AND OF URINE

In diseased conditions of the kidneys, the normal level of urea and nonprotein nitrogen in the blood is usually first affected. The relationship between urea in the blood and the output in the urine should always be considered, especially in the study of kidney function. The important thing is the ratio between the urea content of the urine and that of the blood. One may have a high blood urea level with a high urinary output, and still have a fairly good functioning kidney, at least when it is able to cope with this situation, whereas, if the blood urea is high, and the urinary output low, it shows a very much more marked deficiency in kidney function. Addis has devised a urea function test that aims at an estimation of the functional capacity of the kidneys, and this after all is the most important evidence needed from the standpoint both of prognosis and of treatment. Urea retention occurs under a great

many different conditions besides nephritis, as in cardiac conditions, in syphilis, in lead poisoning, and in many of the anemias.

CONCENTRATION OF THE BLOOD

Certain conditions which raise the concentration of the blood, as vomiting, diarrhea, profuse sweating or polyuria, may cause an increase in the red blood cells. These conditions produce a water loss in the blood, so that the hematocrit reading (the reading in an accurately calibrated centrifuge tube after centrifuging) would show a marked reduction in the normal plasma and an increase in the cell content. We have seen the cell content as high as 80 per cent. (normal cells from 46 to 48, plasma from 52 to 54 per cent.), and the plasma content as low as 20 per cent. in cases of acute diarrhea. It is therefore important, in interpreting the number of red cells, to consider the change in blood volume and water content of the body. The water content of the body in children is especially affected by two factors; age and feeding. We have shown a definite curve in the blood volume in newborn infants and in infants during the first year of life. The effect of food on the water content, and therefore, the concentration of the blood, has been shown to have a definite relationship to the amount of carbohydrate food given. With high carbohydrate food, there is definite retention of water in the tissues. It has been shown that glycogen, when it is stored in the body, takes with it three times its weight in water, so that children on a high carbohydrate diet would tend to have a diminished blood volume.

RATE OF CIRCULATION

In nutritional conditions with marked anemia, the rate of circulation in the venous and capillary blood is important. It has been shown that there is a marked increase in the red cells and the hemoglobin content in the capillaries in cases of marked malnutrition, and that this is due to the peripheral constriction of the blood vessels, which is not found in normal infants or in those suffering from other conditions, except an acute diarrhea. In both diarrhea and athrepsia or malnutrition, the blood flow is markedly decreased. In cases of malnutrition, however, the hematocrit readings are reversed as compared with the cases of diarrhea, the plasma being increased and the red blood cell percentage decreased. In the anemias, often the blood flow is markedly increased. In all these conditions, besides the viscosity of the blood and the total blood volume, other factors must be considered in estimating the rate of blood flow, such as the condition of the heart, and the influence of the vasomotor system. In cases of acute diarrhea, starvation, athrepsia or malnutrition, as soon as food or fluid are given, the blood volume will be rapidly restored as well as the blood flow increased. The importance of the water quotient has thus been definitely determined by a careful study of these blood factors, and these studies have undoubtedly had more effect in lowering the mortality of these nutritional conditions in infants than any other studies that have been carried on during the last few years.

THE BLOOD VOLUME

The volume, as well as the concentration of the blood, plays an important rôle in the pathologic physiology of the blood. The normal values for plasma and blood volume are best expressed in percentages or fractions of the body weight, or as the number of cubic centimeters per kilogram of body weight. The best method for estimating the blood volume is the vital dye method. As the dye is not taken up by any of the red blood cells or tissues, but remains for a comparatively long time in the plasma, it can be easily and accurately determined by colorimetric methods. In pathologic conditions, the changes from the normal blood volume are quite striking. For example, the blood volume following severe diarrhea is markedly decreased, and in these cases the hematocrit readings show a very marked relative increase in the red blood cells and a diminution in the plasma volume. In the chronic intestinal and nutritional conditions, such as athrepsia or malnutrition, the blood volume in these cases is relatively increased, whereas the red blood cell volume is decreased. In anemias, even where the total blood volume is not markedly lowered, there is a change in the comparative percentage of plasma and cells, as there is a relative increase in the plasma and a diminution in the red blood cell percentage. In both chronic nutritional conditions and anemias, the plasma may be as high as 80 per cent. of the total hematocrit reading. Boch has pointed out, however, that plasma tends to be constant, so that the variation in these pathologic conditions is one mainly of the red blood cells. Where the reduction of the blood volume is as low as 20 per cent., as has been shown by Robertson and Boch, there is definite indication for transfusion, because a lower limit is incompatible with life. These studies in blood volume have shown the importance of transfusion.

CONCLUSION

In this rather hasty and cursory discussion of some of the modern lines of investigation of blood, I have simply tried to indicate the various lines along which these problems can be attacked, and have pointed out some of the achievements which have resulted from these studies. We can confidentially expect that our knowledge of these problems will be much clarified by the continuation of these investigations.

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ABSTRACT OF DISCUSSION

DR. HERMANN M. APPEL, New York: In testing for hemolysis of the red blood cells, is urobilin obtained by duodenal intubation? In that way we get the first output of urobilin before it gets into the blood or into the urine, and it can definitely be established in that fashion.

DR. FRANK C. NEFF, Kansas City, Mo.: Dr. Lucas made an interesting observation about the cause of cyanosis in young children with high infectious states and in febrile states.

DR. WILLIAM PALMER LUCAS, San Francisco: We have devised a test for estimating the bilirubin in the blood plasma which gives the percentage ratio of bilirubin. We find that it appears earlier in the serum before any sign of icterus appears. I have some tubes here too small to pass around which show the gradation in the new-born. We have found very definitely that in the new-born it appears in the serum first. And then it depends on the function of the liver whether it is thrown out into the intestinal tract or not. We have been unable to find urobilin in the stools of the new-born during the first ten days, whereas during that period icterus neonatorum appears quite frequently. We feel that the amount of bilirubin can be estimated more accurately in the plasma, and its appearance and disappearance can be noted more clearly. The same thing occurs in hemolytic jaundice. About the cyanotic state—that was in cases of lowered temperature and not of elevated temperature. That is a different problem.

CHOLECYSTOGASTROSTOMY AND THE COURVOISIER GALLBLADDER *

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The clinical picture of chronic obstructive jaundice is so well recognized that it calls forth little comment. However, the rapid loss of weight, the emaciation and asthenia, the pruritus and disturbing mental depression, associated with cholemia, very often render imperative attempts at operative relief.

In a paper published in August, 1916,[1] entitled "Relief of Chronic Obstructive Jaundice by Palliative Operations," an argument was advanced for a more extended employment of cholecystogastrostomy. In the succeeding years, we have given this operation a far wider application and have utilized it in more varying pathologic conditions. Neoplasms or irremovable tumors involving the distal half of the biliary ductal system are the most frequent indications for diverting the bile current. There are, however, other lesser indications which may call for surgical intervention. These may be summarized, thus: (1) Mistaken diagnosis: Not infrequently a surgeon operates for supposed malignancy and finds the diagnosis has been incorrect, and by the institution of drainage, the inflammatory condition subsides with recovery of the patient. It is only upon such premises that the occasional "cures" of supposed cancer can be reasonably explained. "No one living is infallible in the differential diagnosis of obstructive jaundice. The diagnosis is always so difficult and the chance of a life saved is so important that however positive the evidence of malignancy may be I now advise operation in all cases."[2] (2) The relief of distention pain: All patients do not have pruritus or the mental depression of cholemia, but they suffer a gradually increasing pain from distention of the biliary apparatus. (3) Intractable pruritus: in many cases so severe that the patients positively demand relief. (4) Social: to prolong life in comparative comfort until such time as death takes place from metastasis or local extension of the growth. (5) As a preliminary measure in chronic jaundice when the origin of the obstruction is doubtful and when the condition of the patient with cholemia, asthenia and hemorrhagic tendency is such as to prohibit thorough exploration. (6) As a palliative operation in the aged and infirm. One has only to recall a patient on whom an emergency cholecystostomy has been performed with the idea of a more thorough surgical exploration later. Quite contrary to expectations, the second operation is attended with more danger than the first by reason of the great loss of bile that has taken place in the interim. It would seem that the patient's strength would have been more adequately conserved by a cholecystogastrostomy with internal drainage of bile into the gastroduodenal segment. (7) In certain patients with recurrent cholecystitis and cholangeitis, incompletely cured by cholecystostomy and in whom the closure of the sinus brings about an attack of jaundice and ascending biliary infection. Closely associated with this condition is an ill-defined group of cases with biliary cirrhosis sequential to chronic cholangeitis in whom cholecystogastrostomy affords a remedial measure of undoubted value. (8) Cholecystogastrostomy is possibly indicated as a therapeutic measure in the treatment of certain types of ulcer of the stomach.[3]

FUNCTIONAL SIGNIFICANCE OF BILE

Our knowledge of the functional significance of the bile is by no means a closed chapter. Although the bile does not possess any direct power as an enzyme, it has, nevertheless, a zymosthenic or activating influence[4] in that it increases the activity of the ferments of the pancreatic juice and activates the lactase of the intestinal secretion, and has a strong stimulating influence in the formation of invertin. It augments the lypolytic power of the pancreatic juice and favors saponification and thus aids materially in the absorption of fat. Protein by-products form insoluble compounds in an acid medium, but are redissolved in an excess of bile. Although bile has no antiseptic power, per se, it aids in preventing intestinal putrefaction by favoring the development of the less active organisms and by modifying the activities of such bacteria as are present. In addition, bile probably has an antitoxic function by neutralizing certain poisons arising from intestinal putrefaction.[5] Mucin is coagulated by mucinase derived from the cells lining the intestines. Bile inhibits the action of mucinase with the result that the mucin in the upper portion of the intestinal tract is in a fluid state and undergoes coagulation only lower down in the large intestine. In normal feces, the saponified and unsaponified fats are approximately equal in amount. The pancreatic juice brings about the proper degree of fat splitting that must precede saponification so that if the excess of fat is due to a pancreatic defect, unsaponified fat will be in excess of the saponified. On the other hand, the absorption of fat is dependent on the bile salts acting on the fats already digested by the pancreatic juice. Accordingly, if there is loss of bile, saponified fats will be in excess because they cannot be adequately absorbed. It is due to this difficulty in the absorption of fat that chronic jaundice is so uniformly associated with wasting.[6] The emaciation and loss of weight are not indicative of carcinoma, as both may be present in chronic pancreatitis with obstructive jaundice.

The bile salts that enter the bowel are reabsorbed and used over again several times. Soon after a cholecystostomy has been established, the salts in the bile fall to one tenth of the normal since reabsorption cannot occur. The loss of bile externally by prolonged cholecystostomy means an exhaustion of bile salts due to the inability of reabsorption and a progressively diminishing hepatic function of the liver.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* From the Surgical Department of New York Post-Graduate Hospital, Dr. John F. Erdmann, Director. The material and cases on which this paper is based are from the collective surgical service of the department.

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PANCREATIC CARCINOMA AND COURVOISIER GALLBLADDER

Pancreatic or ampullar carcinoma is the most rapidly fatal of any form of neoplasm. Death ensues within from seven to eight months from the time of onset of noticeable symptoms, and occurs usually before the growth metastasizes or obtains any great local extension. There is no place, with the possible exception of the central nervous system, where a neoplasm, while yet small, induces so much widespread symptomatology as at the lower end of the common duct. The clinical differentiation between cancer and chronic pancreatitis is always difficult and sometimes, even with intra-abdominal exploration, it may be impossible to distinguish between these two conditions, particularly if the pancreatitis is nodular. They are both associated with chronic obstruction of the common duct, and the persistent jaundice and distended Courvoisier gallbladder give a similar pathologic picture. Bevan [7] states that he has had "twenty or more of these cases, many of which were considered malignant at exploratory operation but had made complete recoveries."

Stone in the common duct is usually the result of a previous infection of the gallbladder and predicates a chronic cholecystitis with cicatrization and contracture. Courvoisier,[8] reporting 187 cases of obstruction of the common duct, found that in 100, obstruction was due to causes other than stone and in eighty-seven the obstruction was due to calculous impaction. Of the 100 cases in which obstruction was due to causes other than stone, in ninety-two there was a dilatation or distention of the gallbladder and in eight cases there was a normal gallbladder or an atrophy of the gallbladder. Of the eighty-seven cases in which obstruction was due to stone, in seventy cases the gallbladder was atrophied and in seventeen cases the gallbladder was dilated. The deduction was made by Courvoisier that in cases of chronic jaundice due to obstruction of the common duct a contraction of the gallbladder signifies that the obstruction is due to stone: a dilatation of the gallbladder that the obstruction is due to causes other than stone. Cabot,[9] reporting the cases of the Massachusetts General Hospital, found eighty-six with obstruction of the common duct. With the exception of four cases, which constituted only 5 per cent. of the total number examined, every record in which definite statements are to be found confirms Courvoisier's law.

The exceptions to Courvoisier's law are few: (1) stone in the cystic duct with hydrops or empyema and with stone in the common duct; (2) acute cholecystitis, with obstruction of the cystic duct and with a stone in the common duct; (3) chronic pancreatitis with stone in the common duct; (4) stone in the cystic duct with compression of the common hepatic duct, and (5) malignant disease along the course of the common duct, with an old chronic fibroid gallbladder.

It is usual to find the Courvoisier gallbladder distended with bile. This is not always the case, as a distinct hydrops and a well dilated common duct filled with clear mucoid fluid have been observed. This condition is associated with patulous cystic and hepatic ducts and is essentially a pressure acholia. In one of our cases with steadily increasing jaundice, the gallbladder and common duct were found at operation to be enormously distended with clear fluid. A cholecystostomy was performed, and for a few hours clear fluid flowed from the tube. After the mucoid material drained away, bile was obtained in large amounts. Later necropsy revealed a small carcinoma at the ampulla of Vater. Kausch [10] thinks that the hydrops in these cases is due to excessive secretion by the mucosa of the gallbladder and ducts, and, with the duodenal opening occluded, the pressure in the ductal system is so raised that the bile is forced into the blood and lymph vessels of the liver.

OPERATIVE PROCEDURES

Operations for carcinomatous jaundice will be palliative procedures to provide drainage for the biliary secretion. The simplest technic for this purpose is external drainage by means of cholecystostomy. Such an operation, however, entails a rapid loss of bile salts and body fluid and should not be the procedure of choice. The union of the gallbladder to various portions of the alimentary tract has been performed a number of times in almost all of the large clinics of the country. The union to stomach, duodenum, small intestine and colon has been variously performed for a wide variety of lesions. Theoretically, an anastomosis can be made between the gallbladder, hepatic duct, common duct and any contiguous bowel surface thus: (1) anastomosis between the gallbladder and various portions of the gastro-intestinal tract—cholecystogastrostomy, cholecystoduodenostomy, cholecystenterostomy, cholecystocolostomy: (2) anastomosis between the hepatic duct and the stomach, duodenum or a portion of the small intestine; (3) anastomosis between the common duct and the stomach, duodenum or small intestine.

The choice of a particular operation will depend on a number of factors, such as (1) the physiologic efficiency of the procedure; (2) the ease of technical accomplishment; (3) the relative immunity from ascending infection; (4) the immediate effect on the physiologic chemistry of the gastro-intestinal tract; (5) the remote effect on the patient's metabolism, and (6) the operative mortality. The classical operation of cholecystoduodenostomy will more nearly simulate the natural condition of biliary drainage than any type of operation. The technical difficulties of performing cholecystoduodenostomy with a fixed duodenum and the possibility of duodenal fistula are factors which will prevent this type of anastomosis from being accepted as a uniform surgical procedure. Moreover, the mortality of cholecystoduodenostomy is certainly greater than cholecystogastrostomy.

Technically, the union of the gallbladder and the stomach is probably more easily performed than any other form of anastomosis as the parts are naturally in close and intimate relationship, and little, if any, mobilization is necessary to bring the viscera in apposition. Cholecystenterostomy carries with it the possibilities of angulation and the necessity for a secondary entero-enterostomy to prevent kinking. The union between the colon and gallbladder is physiologically defective: (1) on account of the reflux of the highly charged bacterial content of the colon with an almost certain degree of ascending infection; (2) the

7. Bevan, A. D.: Present Status of the Surgery of the Bile Tract, Surg., Gynec. & Obst. **27**: 49 (July) 1918.
8. Courvoisier: Beitrage zur Pathologie and Chirurgie der Gallenwege, Leipzig, 1890, p. 58.
9. Cabot, A. T., quoted by Moynihan, B. G. A.: The Pathology of the Living, Philadelphia, W. B. Saunders Company, 1910, p. 203.
10. Kausch: Der Hydrops des gesamten Gallensystems bei chron. Choledochus verschluss, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **23**: 138, 1911. Outerbridge, G. W.: Carcinoma of the Papilla of Vater, Ann. Surg. **57**: 402 (March) 1913.

possibility of reverse mucous currents from the colon as described by Bond; (3) the loss of the digestive functions of the bile, especially in the saponification of fats; (4) the fact that the bile is soon evacuated with the stool means a rapid permanent loss of the bile salts which would be normally reabsorbed from the intestines, to say nothing of the profound changes that would be induced by the lack of bile in duodenum to neutralize the acid chyme. The union of the gallbladder to the colon can be summarily dismissed as being the least desirable of all forms of anastomotic surgery.

A review of the experimental and clinical evidences found in the literature pertaining to gastrobiliary fistula or cholecystogastrostomy demonstrates not only that the anastomosis is rational but also that it has advantages distinctly superior to any other method of anastomosis of gallbladder to any portion of the gastro-intestinal tract. The advantages of the union of the gallbladder to the stomach may be summarized thus: (1) A close anatomic apposition of the two viscera is easily accomplished; (2) the delivery of bile into the gastro-intestinal tract at an approximately normal point; (3) the facility of visceral mobilization and the ease of technical performance by reason of the fact that the anastomosis is between two viscera of fairly well developed size and thickness; (4) the adequate sterilizing mechanism of the stomach prevents ascending infection together with the known absence of infection in operations on the stomach and gallbladder,[11] and (5) minimal mortality.

Physiologically considered, there is no objection to the presence of bile in the stomach as has been demonstrated so often clinically and proved by experiments on animals.

In an experimental study by Grey,[12] in which cholecystogastrostomy was performed with complete division of the common duct, it was demonstrated that on a diet of meat and water, with bile constantly present in the stomach throughout the course of digestion, there was no appreciable effect on the acidity of the gastric content. Postmortem examination showed a functioning union, and the gastric mucosa showed no pathologic changes.

The presence of bile in the stomach produces no directly harmful influences. It is found constantly after gastro-enterostomy, and the Polya operation and its regurgitation with the various tests for pancreatic and biliary function suggests that it is tolerated by the stomach with impunity. At the completion of gastric digestion, duodenal contents flow back into the stomach through the relaxed pylorus.[13] In animals that have been fasting, intestinal juice will continuously run out of a gastric fistula. Rehfuss [14] found bile in the fasting stomachs of most of the normal students examined. Contrary to the usual conception, the normal reaction in the pyloric end of the stomach is actually alkaline, the hydrochloric acid being secreted mainly by the glands of the proximal two thirds; and it would seem that in the inactive or resting phase of the stomach bile is constantly present in the antrum.[15] If the alkalization of the stomach is the chemical means for the cure of gastric ulcer—a view taken by many surgeons—then there can be no valid objection to a technical procedure which will deliver the biliary current just proximate to the pyloric ring by a cholecystogastrostomy.

For performing a cholecystogastrostomy, it is necessary to have a gallbladder with a patulous cystic duct, with relatively normal walls, or not too seriously diseased in order that the gallbladder and cystic duct may properly function as a delivery tube from the common hepatic duct to the stomach. After union of the gallbladder with the stomach, the gallbladder probably contracts and elongates into a small tubular channel. Roentgen-ray studies in cases in which cholecystogastrostomy has been performed showed that bismuth or barium do not enter the gallbladder.[16] In functional determination of the gastric acidity after cholecystogastrostomy, the amount of free acid is not less than the normal amount, although there is a varying diminution in the total acidity.

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11. Deaver, J. B.: Surgery of the Upper Abdomen, Philadelphia, P. Blakiston's Sons & Co., 1921, p. 41.
12. Grey, E. G.: An Experimental Study of the Effect of Cholecystogastrostomy on Gastric Acidity, J. Exper. Med. **23**: 15-24, 1916.
13. Alvarez, W. C.: The Motor Functions of the Intestine from a New Point of View, J. A. M. A. **65**: 388 (July 31) 1915.
14. Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: The Question of the Residuum Found in the Empty Stomach, J. A. M. A. **63**: 11 (July 4) 1914.
15. Hertz, A. F.: The Sensibility of the Alimentary Canal, London, Oxford Press, 1911, p. 58.

ABSTRACT OF DISCUSSION

DR. JOHN B. DEAVER, Philadelphia: I am inclined to attribute the emaciation sometimes associated with jaundice to the toxic effect of the bile in the blood rather than to the difficulty in the absorption of fats. What proof is there that the loss of bile per se is harmful? In the treatment of chronic, as well as in some cases of subacute, pancreatitis, associated with disease of the gallbladder or bile ducts, patients do just as well where bile drainage has been done to the outside through a tube in the gallbladder or in the common duct. True, these patients have to wear a bottle, in the case of women in a little pocket made in the corset, and in men in the underwear. My patients who are discharged wearing T tubes wear the tube from nine months to two years, and even as long as four years, with perfect comfort, and what is more, perfect well being. Cholecystogastrostomy versus cholecystoduodenostomy is more or less a Hobson's choice. Both are procedures that should be used only in comparatively few cases. That the gastric anastomosis is easier than the duodenal may be true, but it scarcely is an argument in its favor. However, I question whether one who cannot trust himself to do the latter should do the former. The duodenum may, perhaps, not always be accessible, and in such instances gastric anastomosis can be made. With few exceptions, I mobilize the duodenum, which enables me to bring it up well enough to make this anastomosis without difficulty. Cholecystoduodenostomy is certainly the more logical operation because it is the more physiologic one. But in either operation, in the absence of complete obstruction of the common duct, these openings close sooner or later. I have demonstrated this in a number of instances in which I have reoperated six or eight months afterward. When I do a choledochostomy I often close off the tube two or three times a day for a short time, convalescence being well established. In pancreatic or other cases in which patients are discharged with the T tube in place, they are instructed to clamp it off occasionally with the hope that the bile itself will get in the intestine. I certainly would not advocate the operation of cholecystogastrostomy in the treatment of ulcer. Considering the good results obtained in the treatment of gastric ulcer by excision of the ulcer, combined with posterior gastro-enterostomy, or by partial gastrectomy, it certainly does not seem justifiable to use so extreme and unphysiologic an operation as cholecystogastrostomy for these ulcers.

DR. E. STARR JUDD, Rochester, Minn.: There is no question that many patients are cured by cholecystostomy or

16. Jacobson, J. H.: Anastomosis of the Gallbladder to the Stomach: "Cholecystogastrostomy," Am. J. Obst. and Dis. Wom. and Chil. **70**, 1914.

choledochostomy. One point is sometimes overlooked: In anastomosing the fundus of the gallbladder and the intestine, the bile will not drain through the anastomosis unless there is practically a complete obstruction of the common duct. We have found cholecystogastrostomy in cases of complete jaundice more satisfactory than cholecystoduodenostomy, although, when the latter can be done as easily, we still employ it in some cases. We should continually bear in mind that in some of these cases the lesion is a carcinoma of the head of the pancreas, and that in others it may be a chronic pancreatitis. This emphasizes the point Dr. Heyd brought out, that, under ordinary circumstances, these cases of painless jaundice should be explored. Considerable work is being done on preliminary treatment in jaundice cases. The risk from hemorrhage after operating in jaundice cases is being reduced considerably by the intravenous administration of calcium and by repeated transfusions.

DR. MOSES BEHREND, Philadelphia: There is no question that the operation of cholecystogastrostomy has been performed for conditions for which it should not be done: for instance, gastric ulcer. Whenever we can we ought to anastomose the gallbladder and the duodenum. That is true. But there are conditions in which it is impossible to bring up the duodenum to the stomach. Therefore, the proper thing to do is to anastomose the gallbladder to the stomach. Patients may vomit for from twelve to twenty-four hours after the operation, but following that they are comfortable, and free from symptoms. Our anastomotic openings have stayed patulous and have given the greatest relief. If I wanted to have this operation performed and were to choose between external and internal drainage, I would much prefer an internal drainage operation. I believe there is less discomfort with internal drainage than with external drainage. We cannot always tell whether there is carcinoma at the head of the pancreas. I operated on a patient three years after Dr. Deaver performed a cholecystectomy for cholelithiasis. I drained the common duct for about six months with a T tube. The patient was apparently well for two and a half years. Then she began to have symptoms again of pancreatitis. I thought she had carcinoma of the pancreas and performed a choledochogastrostomy. This patient has been well for seven months with absolute relief of jaundice and pain. It is an operation that can be recommended, and I sincerely hope it will be performed many times hereafter.

DR. JOHN J. GILBRIDE, Philadelphia: Dr. Heyd has given you Courvoisier's law, which is that there is a dilated gallbladder under certain conditions and a contracted gallbladder under other conditions. Therefore, the appellation "Courvoisier's gallbladder" is not a good one. In all these cases of anastomosis of the biliary passages with the gastrointestinal tract there is more or less continuous drainage of bile. This is also true after cholecystectomy. I occasionally see cases of cholecystectomy with regurgitation of bile, especially those cases in which there are many adhesions. Attacks of vomiting and various other gastric disturbances continue off and on for weeks at a time. We should not anastomose the gallbladder to the stomach for gastric ulcer. If bile does any good for gastric ulcer it should be effective in duodenal ulcer below the papilla of Vater. It evidently is not. We all agree with Dr. Heyd as to the advisability of operating in cases of chronic jaundice because of the possibility of error in the diagnosis. The ideal operation is anastomosis of the gallbladder with the duodenum. Occasionally one sees a duodenum whose walls are so soft as not to hold the suture. In four cases of chronic jaundice due to malignant disease of the head of the pancreas that I have seen there was no itching. The first case of this kind came under my observation in 1905, and I was impressed by the absence of scratch marks on the body, although the patient was deeply jaundiced. Therefore, it occurred to me that there might be a difference, aside from color, between the jaundice caused by malignant disease and the jaundice of nonmalignant disease. Physiologists teach that the itching associated with jaundice is due to one of the bile salts. I have thought that the itching is due to infection. If that is true, there would be an absence of itching in jaundice from any cause when not associated with infection.

DR. CHARLES GORDON HEYD, New York: If nature intended bile to be excreted, she would have devised an apparatus to perform this function as she does with the urinary system. Again, bile is delivered at the first portion of the small intestine where absorption takes place. Furthermore, we know that after cholecystostomy the amount of bile salts in the bile diminishes to one-tenth the normal amount and there is a condition of exhaustion due to the too rapid loss of bile salts, as Gerster brought out when he urged the feeding of cholecystomized patients with their own biliary discharge. Dr. Deaver states that he clamps off the tube in his cases periodically to prevent the too rapid loss of bile. In chronic pancreatitis it does not matter whether you drain internally or externally. I was advocating this operation primarily for permanent occlusive processes of the common duct; I did not intend to "ride" the operation as a cure for gastric ulcer. As to the apparent contradiction pointed out by Dr. Deaver as to not diminishing the acidity of the gastric contents by cholecystogastrostomy I would draw attention to the fact that the normal reaction at the terminal or antral portion of the stomach is alkaline, and that an alkaline fluid at the outlet of the stomach does not necessarily interfere with acidification or acid digestion in the proximate two thirds of the stomach.

THE USE OF EXPERIMENTAL PSYCHOLOGY IN THE PRACTICE OF MEDICINE*

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It is often said that much of the practice of medicine consists of understanding the psychology of the patient. The experienced physician does not fail to estimate personality, looking for signs of irritability or emotion or hypochondria. In this way he may be aided in deciding to what extent the symptoms are merely subjective, and may learn how best to handle the individual. Every one knows that even if there is organic disorder, successful treatment may depend on keeping the patient in a favorable state of mind—perhaps cheerful and occupied and obedient to general directions. In all of this, suggestion is commonly used. Accordingly, we may agree that every practitioner makes use of some type of psychology, whether he knows it or not; but the point to be emphasized here is that such knowledge used by the average physician today as a rule is based merely on his individual opinions and his general experience with persons in everyday life, and so does not differ from what the intelligent lawyer or layman might use under like circumstances. His knowledge of the mind does not come from the laboratory, and is popular rather than scientific.

A first step toward giving the average physician a groundwork in scientific psychology has been taken by many medical schools of this country in making that study a part of the premedical requirement. Evidently this is good, so far as it goes; but the student often complains, and with justice, that it falls far short of satisfying his future practical and scientific needs. He is carried through elementary studies of sensation, perception, attention, memory and the like, and finds little indeed in all of this that seems to bear directly on his future medical work. Kahane complains of the same sort of thing in Germany. Every one knows the reason for this deficiency

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in our curriculums: experimental psychologists have more largely turned their attention to education and other branches, and have somewhat neglected the application to general medicine. Yet when one recalls the general importance of psychology, it is almost amazing that the modern practice of medicine has so much delayed the placing of foundation stones on a firm experimental basis.

Although physiology is now commonly taught in connection with laboratory experiments at every step, and psychology is often handled likewise, yet there still are many exceptions. Apparently, if we admit this evil, it can be corrected only through a growing recognition of the difference between the general psychologist and the experimental psychologist and through insistence that work for the medical student always be presented from the experimental standpoint.

As applied to medicine, experimental psychology falls principally into two parts: (1) in relation to psychiatry and (2) in relation to general medicine. As the former already has attained a flourishing growth, it would seem worth while to begin there, and so—even at the risk of repeating things already known to you—briefly to review and discuss some of the outstanding methods, instruments and results.

EXPERIMENTAL PSYCHOLOGY

The instruments used in experimental psychopathology give ocular proof of the growth of that science. Besides apparatus familiar also in the physiologic laboratory, such as the pneumograph, Marey tambour and sphygmograph, there have been developed an amazing array of special devices. One may mention the plethysmograph, and its well known use for recording changes in circulation of a part during mental activity. The string galvanometer of Einthoven was in general use for the study of emotion long before that instrument became so common for electrocardiography. The study of tremors was reduced to a fine point when Sommer, improving on methods previously employed at Harvard, developed his machine for recording movements of the extremities in three directions, and since then has been turned to chorea, hystero-epilepsy and other disorders. Of late years a device has been developed for recording tiniest movements of the eye, and one also for changes in facial expression, such as wrinkling of the forehead. The ingenuity shown in some of these measures is astonishing. For example, in the study of vasomotor conditions, one worker has developed a means of recording so delicate a thing as flushing of the skin. This is done with a Marey tambour in contact with a selected portion of the face, so that as blood enters the skin, a slight pressure is made on the drum membrane. The membrane in turn presses on a little column of illuminating gas, which lights a small burner. As the flame then fluctuates, it affects a selenium cell, causing electrical changes shown on a galvanometer provided with a needle which is deflected and so permits a record to be made on a smoked drum. Many and various are the tachistoscopes for the exposition of optical stimuli, each in some respect an improvement on one of the foregoing. Hipp chronoscopes or tuning forks have been used to measure the time taken by mental process in terms of thousandths of a second. Often this has been done in connection with reaction time: The individual waits for a certain color or other object to be suddenly exposed, then at once presses on an electric telegraph key, whereupon the time interval may be measured. It is clear that many of these instruments could be simplified for clinical use, if interest among psychiatrists might once be sufficiently aroused.

With apparatus of this sort, many and various studies have been made under controlled mental conditions and often with mathematical accuracy of the behavior or reactions of the patient, or of his physiologic functions, or of his subjective reports. Of course, the reliability of the subjective report may vary with the condition of the patient; yet with time and skill the intelligent patient can often be trained to give reports no less valuable than those obtained in the laboratory. Experimental psychologists draw a distinction which is of the greatest importance between mental reaction and introspection. The former means any mental act in response to stimulus, as when an individual repeats numbers during a memory test, or again, when he utters aloud his associations in response to some word. On the other hand, introspection or, as it is better called, the method of examination, means the act of scientifically observing conscious processes at a particular moment; that is, under controlled conditions the subject observes his sensations or attention or other mental process and gives his report to the experimenter. The task often requires intelligence and special training. Just as a beginning student of pathology cannot without previous experience describe the contents of a microscopic section, so also the scientific introspector is not born ready made. The desired end in training the student of pathology is to teach him to observe, and to describe accurately and fully, yet to keep his observations distinct from his interpretations. Such training in observation is also a goal in psychology. This is perhaps not always realized by every physiologist and other workers along mental lines, who sometimes seem to ignore the existence of technical observation and literature in this field. Unfortunately, it may be admitted also that the method of examination of conscious processes, as developed by Wundt and his followers and in a special way also by the Wuerzberger school as well as by Binet and certain American workers, has not yet become generally known and precisely applied even among all experimental psychologists. Under these conditions we must not look for too much from introspective psychology applied to psychiatry in the near future. On the other hand, very much has already been done in the study of behavior, psychophysical reactions and mental activity.

METHODS AND RESULTS

At the risk of boring you with relating further what you already know, it seems worth while very briefly to review some of the methods and results. In extensive studies of fatigue with the ergograph, it has been found that every individual has a characteristic curve of fatigue. If the index finger is made to adduct repeatedly against a constant load, the normal curve is a gradual rise to a peak, then a phase in which the curve is either horizontal or convex or concave, with periodic waves of highest activity due to mental or mechanical varying factors, and at the end a sudden breaking off or else a period of relatively slight movement. At this point electrical stimulation may still move the muscle, where the will-impulse fails. However, if the weight is somewhat reduced, the muscular activity may continue in a relatively undiminished way, and if the weight is correspondingly reduced as

fatigue progresses, the muscular activity may be continued practically without end. Accordingly, the chief seat of this type of fatigue seems to be in the muscle rather than in the nervous system. Caffein was found by Kraepelin to increase the amount of muscular work, while alcohol increased the height, although it decreased the number of possible strokes. Massage helped the fatigued muscle toward a temporary recovery. It seems characteristic of melancholia that the peak of the curve may be lacking, or else may be short and relatively low, followed by a rather quick decline to a low level, which remains constant for a long period. On the other hand, in catatonia the contractions may be vigorous, but the distinguishing characteristic is the comparative constancy of the level of the curve. There is comparatively little difference between the amount of work done by the muscle at the end as compared with the beginning of the experiment. In fact, the catatonic often stops short, thus ending the curve. Here, then, is graphic registration of stereotypy of movement, which would seem to have a certain diagnostic value. The writing machine of Kraepelin and the simpler device of Henry have been warmly recommended for registering voluntary motor activity. Records are made not alone of the speed but also of the pressure in writing. In melancholia a rapid decrease of pressure and speed has been noted, while in manic excitement the opposite seems to be characteristic. In catatonia, even when letters are made correctly and well, it seems characteristic that the time intervals are markedly irregular. This trait seems to come and go with the phase of catatonia, and would appear to be a fine sign pathognomonic of this condition.

The use of the string galvanometer for recording the objective electrical changes that take place in the presence of emotion is very well known. Various workers, including Veraguth, Féré and Binswanger, have tested the emotions by passing a feeble current through the individual, using electrodes of the same material. On arousing an emotion by means of spoken words, so-called "association tests," the galvanometer shows a marked deflection, and this change in conduction has been called the psychogalvanic reflex. Studies have been made of catatonics, organic dements and melancholics, and most extensively of psychoneurotics, whereby objective signs of mental complexes have been gained, valuable not alone for diagnosis, but also for treatment. The pneumograph also has proved of interest to various workers, the recorded breathing showing variation with the state of pleasure or discomfort, or with concentration of the attention. In a case of stupor, Gregor used the test of changes of breathing made in response to sensory stimuli, in order to decide whether there was consciousness.

In a brief and general paper it is impossible to do more than touch upon interesting points here and there. Experiments have been made on the sense of time by having the patient compare two intervals of a fraction of a second to six seconds in length, marked off by the sound of a falling hammer. In Korsakoff's psychosis it was found that the disturbance of temporal orientation is simply due to failure of attention or observation, rather than to any disturbance of some assumed sense of time. Experiments on understanding have shown typical disturbances in such disorders as hebephrenia. The topic of association tests is too broad to be more than touched on here. They have been used, for example, in the psychologic diagnosis of epileptic psychosis by Sommer, Fuhrmann, Ritterhaus and Klepper, who applied them also to catatonic conditions. As is well known, in the hands of Jung, Ricklin, Binswanger and their associates, these tests have been offered as a bridge between the older and generally accepted experimental psychology and the new candidate for recognition, namely, psychanalysis. Careful methods for testing the memory in psychiatry have been worked out by Ranschburg and others, and one of the results has been some concrete suggestions for improving the memory of the mentally weak along lines that differ from education of the normal. Stern developed a valuable method for getting a general idea of divers mental functions of the patient with the aid of colored pictures. Isserlin opened the way toward a scientific understanding of the "flight of ideas," explaining that this disturbance is due to failure of what Ach called "determining tendencies."

What now, in summary, is the use of experiment for psychiatry? It explains, clarifies, makes precise and adds to what has been found in the clinic. Fundamental ideas gained from experiment underlie the system of psychiatry of Kraepelin, and may appear in the form of brilliant investigations, such as those of the clinic of Sommer, or in the form of a general work on the diagnosis of mental disorders, such as that of Gregor.

Turning now to the second part of our subject—the application of experimental psychology to the general practice of medicine—we find only occasional areas, so to speak, that have been developed. The effects of drugs on divers mental and physical functions have been well studied by Kraepelin and many others, and need not here be reviewed. Tests of association and of the galvanic phenomenon in functional nervous disorders, as previously said, have been extensively developed. In the literature of physiology, particularly of the gastro-intestinal system and of the internal secretions, when the topic borders on emotion, work has been done which often smacks of experimental psychology. At times it would seem as if the physiologic knowledge displayed were not sufficiently supported with familiarity with what had already been done in the corresponding field in psychology.

IMPORTANT PROBLEMS

What now are some of the important problems of general medicine, which may be attacked with instruments and methods such as those above described or mentioned? It would seem worth while to attempt to answer this question under about eleven headings:

1. *The Effects of Suggestion.*—There are several subtopics here: (*a*) What can and what cannot be accomplished by suggestion on mental processes, for example, on depression, general irritability, excitability and the like? (*b*) What are the possible physical effects of suggestion, and what their limitation? This matter might best be considered in terms of the various systems of the body, namely, the effects on the gastro-intestinal or vascular or glandular system and the like. In Great Britain the work of Pawlow on dogs has been repeated and similar results obtained with men, confirming some of his principles of gastric secretion with the ingenious use of hypnotic suggestion for arousing emotions. (*c*) What functional or organic changes may arise in an individual or among the public as the result of suggestion? (*d*) What maladies may be improved and to what extent by suggestion, with and without other means?

Of course, such inquiries must be undertaken only with a very critical spirit under controlled conditions, with knowledge of any preceeding work, and so far as possible with mathematical accuracy. It is clear also that methods of precision may be used no less in the clinic than in the laboratory. However, if I understand correctly, three points must be kept in mind if such studies are to be carried out with clarity: First, a clear idea of what is meant by suggestion is to be sought not so much in current definitions as in current usage. If one seeks the common meaning as ordinarily employed, it seems evident that suggestion is a very broad term. In one sense it may be said to apply to the mental state of any individual at any moment, since one may truly say that any mental content has been suggested, at least in part, by something else. To be suggestible apparently means that an idea or mental process once aroused partly or completely fails to meet with other contrary ideas or inhibiting mental processes. Again, an individual may be suggestible if his mental processes are so emotionally toned, so intense, as to forestall inhibition. A familiar example of suggestibility is the hypochrondriac who overhears the recital of some cardiac symptom and at once presumes that he has heart trouble. It seems worth while to dwell on these fundamental conditions of suggestion, if only because of the danger of individual groups of workers taking too limited a view of the field. For instance, certain psychanalysts have recently put forth the theory that suggestion is but a form of "transference." Now possibly their point of view is correct so far as that form of suggestion is concerned which arises through the influence of one personality on another, as in hypnosis; but apparently what needs to be kept clear is that the common usage of the term, suggestion, is broader than the personal variety, and can no more be fully expressed in terms of transference than can attention or memory or other like fundamental psychophysical process. A second point that seems worth making is that there are varieties of suggestion. Therapeutic suggestion generally means the effect of belief, since with certain ailments, when we arouse the belief of the patient that he will get well, the result is said to follow. Evidently it is not a matter of no account whether a therapeutic suggestion or belief is aroused by the words of the physician or by a drug or by electricity or by hypnosis. In each of these cases we have what may be called a different *vehicle* of suggestion, and the possibility of cure, indeed, the very mechanism and the precise character of the result, may vary with the character of the vehicle. Finally, it seems worth while to emphasize that ever since Braid and Bernheim made the conception of suggestion familiar and popular, it has become almost a fad with some persons to attempt to explain every mental effect on the basis of suggestion. Of course, any student of experimental psychology will testify that this is not so, but rather that suggestion is only one form of mental influence. Among other types of mental influence may be named the effects of pleasure or pain, of cheerfulness, of distraction of the attention, of psychophysical rest or overexcitement, and of what has been technically called the "Aufgabe" or "task consciousness" or "determining tendencies" of Ach. In short, experimental psychology teaches that we must not be too prone to call every new form of treatment suggestion. Those persons, for example, who are inclined to believe that all electrical therapy is purely suggestive will do well to read R. Sommer's article on electrochemical therapy published in 1913, in which he shows that the theory of suggestion has been exaggerated in that field, certain effects indeed being due to suggestion and certain others to the specific character of the anode and cathode.

2. *Faith or Confidence.*—It would be of moment to get very carefully controlled data as to the effect under given conditions of the faith of the patient that he will get well. Is there any indirect way in which such faith may influence organic disorders of any type or to any extent?

3. *Emotion.*—Types that may be considered are pleasure and pain, cheerfulness, melancholy and excitement. It is to be studied (*a*) in endocrine disturbances and (*b*) in other disorders. It may be of special interest to inquire: (I) In what disorders and at what stages does a characteristic emotional tone appear and what are its physical correlations? (II) What are the emotional characteristics of a particular disease, such as diabetes or tuberculosis? (III) What are the possible influences of emotional tone on the course of disease? (IV) In what way may treatment be assisted by stimulation of a desired emotional tone?

4. *The Origin of Subjective Symptoms.*—It is commonly known that a particular organic malady may be present within certain limits with or without symptoms. One individual will suffer in various ways where the other may scarcely notice the affliction. In this manner some persons often complain of gastric distress where there is apparent absence of any organic change, while another individual scarcely knows he has been ill until his surgeon suddenly finds an ulcer that has perforated. From this it would seem clear that the symptoms of a malady are not necessarily to be traced entirely to the anatomic pathology, but rather are in part a function of the nervous and mental constitution of the individual. Possibly from this point of view various chapters of medicine may at some future time be somewhat modified. Another matter that seems important is the distinction between pain and suffering. By pain is meant the sensation produced by some destructive stimulus; it is a specific type of sensation of specific pain nerves, or else the sensation produced by marked overstimulation of any sensory nerve. Suffering is quite different from this; apparently it means reaction to pain. For example, one individual may remain calm in the presence of a painful stimulus which causes another to fidget and fume. It can readily be shown that this is not due to the nerves of one individual being more sensitive or painful than those of the other, but rather in large measure is due to the habits of motor and associative reaction—that is, the general overexcitability. Likewise, virtually any type of sensation, no matter how painless in the strict sense, may cause suffering corresponding to the associations it arouses. For instance, the sight of a child may cause suffering to a mother bereft of her own offspring.

5. *Psychologic Features of Work and Rest, and Their Influence on the Course of Disease.*

6. *Distraction of the Attention.*—The possible effects on functional and organic disorders is a large field that calls for investigation.

7. *Mental Factors in Particular Diseases.*—It will be of interest to study the effect of mental influences, such as pain or emotion or suggestion, on the gastro-intestinal and other systems.

8. *Can Functional Disturbance Lead to Organic Disorder? If so, in what way?* Osler mentions worry and

mental shock as sometimes exciting causes of gouty arthritis, while depressive influences, such as disappointment in love or dread of the disease itself, as sometimes having an important influence in leading to hyperthyroidism. Joslyn states that a strenuous life may predispose to diabetes.

9. *A Systematic Study of Mental Conditions in Individual Diseases.*—Instances of this may be infectious fevers, constitutional maladies such as diabetes, or again cardiac or particular alimentary disorders.

10. *Psychophysiology of Anesthetics.*—The work of Crile and perhaps also certain articles in the *American Journal of Psychology* provide an opening wedge here.

11. *Psychology of Prognosis.*—Every physician has met instances wherein an unfavorable prognosis, although justified by the pathology, has nevertheless proved of damage to the patient's nervous welfare. Psychologic consideration makes it clear that the physician may with tact be candid and yet take into account the possible effects of his own words and attitude as part of his therapeutic relations to the patient.

CONCLUSION

One may venture to express the belief or at least the hope that with the future development of experimental psychology applied to medicine, a new period of treatment may gradually arise, not merely for functional but also for organic conditions: a period in which the internist will not be content with considering the nervous and mental aspects of disease utterly out of his domain; a period in which it will not be considered sufficient to doctor the body alone, or in other instances the mind alone; but rather the assumption as a rule that, with every patient and in practically every malady, there is both a physical and a mental side that may demand delicate attention. From this point of view therapeutics in general should have a combined physical and mental approach.

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ABSTRACT OF DISCUSSION

DR. ISADOR H. CORIAT, Boston: At present my psychotherapy is psychanalysis. The most important aspect of medical psychology is the therapeutic aspect, and as psychiatrists we must emphasize this therapeutic aspect. The association tests I have used less and less, for I found that the associations would merely stimulate the foreconscious and did not reach the unconscious motives. Suggestion, either walking or hypnotic, is but a form of transference, and if a patient transfers well to suggestion, it is successful, and if not, it is unsuccessful. I have become more and more skeptical in the therapeutic value of suggestion because the psychoneurotic does not really want to get well or eliminate those unconscious desires which keep his neurosis active. That is the chief reason why suggestion has been wrecked and why the analytic investigation has been of such tremendous value in the cure or amelioration of neuroses and psychoneuroses.

DR. ELLA G. STONE, Boston: How could you eliminate suggestion from psychanalysis?

DR. CORIAT: There are two kinds of psychanalysis, the first by expert and practical analysts, who are at the same time neuropsychiatrists, the second by mere dabblers and amateurs. In the hands of expert analysts, suggestion does not enter, for it is eliminated very carefully. Secondly, there is a form of psychanalysis, called by Freud wild psychanalysis, in that suggestion is used and all sorts of incorrect advice given to the patient. No trained psychanalyst uses suggestion; if he uses it, he is not a trained psychanalyst.

DR. CHARLES R. BALL, St. Paul: I have long had a feeling that the medical profession has not lived up to its opportunities in the use of psychic methods in the treatment of its patients. As I have gone about our Minnesota towns and have seen the increasing number of osteopaths and chiropractors, the truth of this statement has been borne in on me. If we consider the manner of the osteopath's diagnosis and his method of procedure, we shall realize that he, in a psychologic way, has the advantage. There are many patients in whom we cannot find anything wrong, yet they are always complaining and are very sensitive about these complaints. They go to the practitioner of medicine, who is unable to find anything the matter with them, and consequently he tells them to go home and brace up—good enough advice, but far from being satisfactory to the patient who feels he is already under some degree of suspicion by his family and friends as to the genuineness of his symptoms. So, somewhat offended in his pride, he goes to an osteopath, who immediately finds that a bone is out of place, or is pressing on a nerve, and at once there is self-justification for the patient in the complaints he has been voicing; he has something to show for them. He feels that he has been vindicated. If the osteopath is vigorous in his handling of the dislocated bone, he can obtain a snap audible to the patient as it supposedly slips back into place, which is further proof to the latter that he had very good reason for his complaints. In this way the osteopath gets the better of the more honest hard working physician, who has been too much obsessed by his knowledge of the physical condition of his patient and too little impressed with the importance of the psychic. When no adequate physical explanation can be found to explain the patient's symptoms, it is a near thought that some psychic basis exists, but it is not often that we take the trouble to search for it. In regard to the unconscious suggestion briefly referred to, I cannot see how something the patient has completely forgotten about is going to be very much of a factor in the causation of his symptoms. The repression of unpleasant things is one of our natural defensive reactions, and the more completely we can repress them the better we are off. Everybody recognizes the truth of this. We are consciously or unconsciously trying to forget the things which disturb us, and if we are able to do this successfully, we secure peace of mind. If we are unable, we continue to be unhappy. While I think suggestion is only a palliative procedure, I do not see how we can afford to neglect the powerful therapeutic value of it in our contact with out patient. If we wish to utilize all the means at our command in the treatment of our patients, we must not forget the positive value of suggestion skilfully applied, which often succeeds when medicines fail.

DR. C. R. WOODSON, St. Joseph, Mo.: The plain English of psychotherapy is one's ability to divert the mind of the patient, and honest suggestion is far better than dishonest suggestion. The one who has power to gain confidence and hold confidence must be honest. The one who does so by deception, misrepresentation and solely to divert, loses confidence. The one who can entertain and take the mind off of self by suggestion or conversation is curing. The individual who worries because of thinking of self, some imaginary trouble, by hesitating or doubting does not do well. To get the mind off of self by thinking of more pleasant things, by seeing everything it comes in contact with, by thinking of the pleasant things and letting the unpleasant or imaginary things pass should be the desire of every good nurse. The nurse who is capable of entertaining or diverting or getting the mind off of self is a very valuable adjunct in treatment.

DR. HENRY KELLER, New York: Dr. Jacobson tried to emphasize the necessity of introducing properly controlled psychologic methods into medicine instead of haphazard guesswork. As an orthopedic surgeon, I feel that were I to eliminate psychology from my practice I should certainly do an injustice to my patients. In addition to a requisite knowledge of kinesthetic equivalents and sensations, which is needed in order to interpret pain sensations coming from joints, tendons and muscles, one must also be conversant with distance and color perceptions in children and other characteristics peculiar to the child, and utilize it to encourage active cooperation in Erb's palsy and infantile paralysis, etc. Many patients after a trauma or contusion of muscles

near a joint cannot be induced to use their muscles voluntarily unless they have first been convinced of the contractile power of the muscles through electric stimulation. Hence, the electric battery will be the psychologic factor in restoring the normal function of the injured limb. However, in addition to using every scientific method for the purpose of ascertaining the nature of the ailment of the patient who is seeking relief, we must not forget that we are dealing with human beings, and not with laboratory apparatus. We must use judgment how to deal with each patient individually, and all our knowledge, experience and doings must needs be fixed with an appreciable grain of common sense. Only in that way shall we be able to get the best of the chiropractors, osteopaths and all other cults whose sole claim to cure patients is based on that which we as physicians frequently lose sight of, namely, that every sufferer must be approached through his cranium. With Socrates we can say, "This is the great error of our day in the treatment of the human body, that physicians separate the soul from the body."

DR. WALTER F. ROBIE, Baldwinsville, Mass.: One speaker said that analysts attempt to eliminate suggestion. That is utterly impossible. I do not think any one can speak to an audience without conveying a suggestion. I translate transference as sympathy, and I wish to register my approval of suggestion as being efficacious. Freud, Jung, in fact, the whole coterie of psychanalysts, convey suggestions to me when I read them; they use suggestion with every patient.

DR. MINER H. A. EVANS, Boston: There seems to be some confusion about what we mean by the term suggestion. Any mental or psychologic process which is set up in the patient and leads to some change in his attitude, whether the change is in the direction of his attention or some alteration of his interest in his problem, is suggestion. In this sense I suppose all education is the result of suggestion. I do not believe it is possible to eliminate suggestion from any method of treatment. However technical and high grade the analysis, and however industrious the effort of the analyst, it is impossible for him to know just what processes have been initiated in the mind of his patient. And it is impossible for him to know the ultimate results of these processes. Changes in the attitude of a patient toward his illness may begin before he sees the analyst at all. It may begin when, after much uncertainty, he finally decides to go and be analyzed.

DR. EDMUND JACOBSON, Chicago: Suggestion is, of course, not the only topic of experimental psychology; but if there is such general interest in it, as is apparent from the expressions brought out, most of the questions that have been raised might well be worked out by way of carefully conducted experiments. So long as such matters of discussion are left to general opinion, they remain speculative, and only by separating them into particular problems can one get conclusions that are reliable. It was farthest from my purpose to introduce the topic of psychanalysis. My task was not to discuss the possible status of that subject, or to inquire whether there are such things as unconscious mental processes, for it is clear that the general practice of medicine does not involve some supposed unconscious mental process on the part of every patient who visits the office for advice and diagnosis. But it does involve a general psychology, since every ailment has some mental aspect, and this calls for the application of general principles, for which there is urgent need of an experimental basis. The patient's mental life must be studied, and this evidently means that there is a diagnostic as well as a therapeutic phase of psychology applied to medicine. If the point of view of experimental psychology is correct, suggestion is by no means the only method of psychotherapy, just as psychanalysis is by no means the only method of psychotherapy. There would seem to be too much of a tendency of this or that school's assuming that its own interests comprise the whole of medicine, and thereby failing to appreciate the accomplishment of others. Suggestion, however valuable, has its distinct limits, and various other methods are available. The general principles of experimental psychology, if introduced into medicine, may put observation in the place of opinion and speculation, and may lead to a better understanding of the human material one deals with.

DETERMINATION OF THE BASAL METABOLISM

AS A METHOD OF DIAGNOSIS AND AS A GUIDE TO TREATMENT *

JAMES H. MEANS, M.D.
BOSTON

The preceding papers in this symposium have set forth the fundamental principles of the subject in hand, human calorimetry and the basal metabolism of man.

It will be my purpose to discuss briefly the rôle that calorimetry plays in the clinic of today, the help that calorimetric observations may be expected to give to the clinician both in diagnosis and in therapeutics, and the nature of this help, particularly its extent and its limitations.

The medical profession of this country is indebted to Atwater and to Benedict and to their collaborators for a vast fund of information on the energy metabolism of the normal human being under nearly every conceivable condition. To Benedict also and his collaborators, and to Du Bois and his collaborators, the profession is indebted for the introduction and application of the science of calorimetry to clinical problems. It was with the development of an accurate surface area formula by Eugene H. and Delafield Du Bois [1] that clinical calorimetry really became a practical possibility, for it supplied the previously lacking prime requisite, an accurate method of judging of the normality or lack of normality of any given person's metabolism.

Since the advent of this formula, the measurement of the gas exchange and the calculation of the heat production therefrom, that is to say, indirect calorimetry, has come into increasingly wide use in American clinics, so that today there is a reasonably extensive literature on the subject. The work of Boothby [2] at the Brigham Hospital, Boston, and that with which I [3] have been concerned at the Massachusetts General Hospital, is, I believe, among the earliest of the sort. The latter work was begun in 1914.

The practical application of calorimetry to the clinic has been chiefly in the group of thyroid diseases, and in the following remarks it is with them I shall have chiefly to deal. In other fields, however, certain helpful information has been gathered which I shall discuss briefly a little later on.

Before considering the metabolism in disease, a remark is in order regarding that of the normal person. The physiologist is oftentimes impressed with the unaccountable variations in metabolism of essentally similar normal persons, and for that reason he may feel that the clinician is not justified in assuming a definite standard for normal metabolism, as is now done. From the physiologist's point of view, he is correct. There are differences in the metabolism of normal persons that are not explainable on the basis of size,

* Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* This article, and the one by Du Bois which follows, are part of a symposium on "Basal Metabolism." The previous articles by Drs. Plummer, Benedict, Lusk and Boothby appeared last week. The complete symposium, including the discussion, will be published in pamphlet form.

1. Du Bois, Delafield, and Du Bois, E. F.: The Measurement of the Surface Area of Man, Arch. Int. Med. **15**: 868 (May) 1915.
2. Boothby, W. M.: Boston M. & S. J. **175**: 564 (Oct. 19) 1916.
3. Means, J. H.: Boston M. & S. J. **174**: 864 (June 15) 1916.

weight, form, age or sex. Nevertheless, these variations are slight compared with the gross differences found in disease. The physiologist, accustomed to measuring bodily processes by methods of precision, is impressed by the slight differences which the metabolism of normal subjects shows; the clinician, on the other hand, obliged as he generally is to estimate abnormalities of function by the qualitative information gained by observation at the bedside, is impressed by the constancy of the metabolism of normal persons.

We are familiar with a number of physiologic constants. None of these are constant in an absolute sense. They are, so to speak, relative constants. From one point of view they may not be constants at all; from another they may present a high grade of constancy. For example, any change in the reaction of the blood except within a minute range is incompatible with life. Indeed, our whole physiologic economy in a sense seems to be regulated to preserve this factor constant. It is one of the most striking constants in nature, and yet within a narrow range it is a variable. The same may be said of the body temperature, the basal metabolism, and in a very limited way of the pulse rate.

It would seem absurd to say that the normal pulse rate is a constant; it is not, and yet it varies within sufficiently understood limits for us to recognize pathologic rates, tachycardia and bradycardia. To that extent it may be considered a constant. It would be equally absurd to fix any arbitrary limits above or below which a pulse rate was considered abnormal; but this does not prevent us from saying that a resting pulse of 40 is a bradycardia or one of 90 a tachycardia. The same reasoning may be applied to the basal

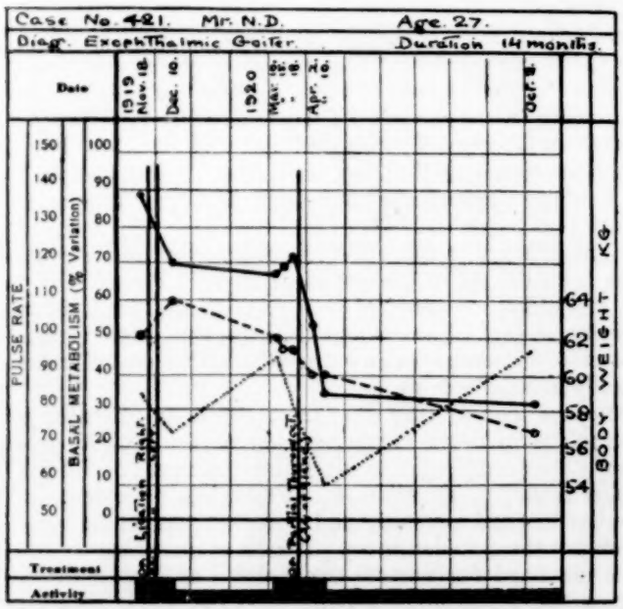

Chart 1 (Case 1).—Basal metabolism (per cent. of variation from Sage Institute standard) shown by the solid black line and dots; pulse, by interrupted line and circles; weight, by the dotted line. Under "Treatment," the type and time of operation is shown. Under "Activity," the rest factor is indicated. When the space is entirely black it denotes complete rest in bed; half black, partial rest; when blank, that the patient is following his ordinary mode of life. The same system will be followed in the succeeding charts.

metabolism. Only here the normal range of variation is distinctly less than in the case of the pulse. It is more nearly a constant than is the pulse, and is therefore a more accurate index of disturbed function than is the pulse, at least as between different individuals. With the metabolism, as with the pulse, it is illogical in a sense to fix arbitrary limits of variation and to consider the metabolism abnormal if it falls outside them. Yet for convenience we may do so if we at all times bear in mind the arbitrariness of the procedure. When we say that a given patient has a bradycardia, we are in our own minds fixing an arbitrary low limit for the

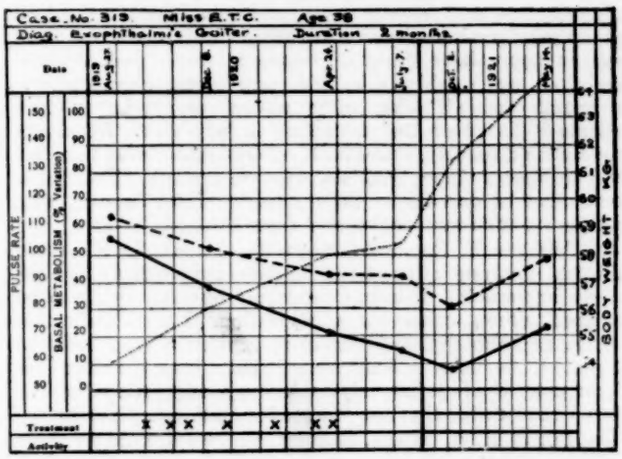

Chart 2 (Case 2).—Under "Treatment," X denotes a roentgen-ray treatment. It will mean the same in succeeding charts.

normal pulse. This is a justifiable and useful mental process. It is legitimate to do the same in the case of the metabolism.

In interpreting the significance of abnormal metabolism findings in patients, we must correlate them with clinical findings and weigh their probable importance in comparison with every other sort of evidence in any given case, exactly as we should do in interpreting any other laboratory or special finding, such as roentgen-ray, phenolsulphonephthalein test, blood sugar, and the like. We must not rush off and say that, because a given patient's metabolism was 25 per cent. above the normal standard or prediction figure, he has hyperthyroidism. The high finding may have been due to some other disease, pernicious anemia, or leukemia perhaps, or possibly to the fact that although we neglected to take his temperature he had a fever at the time the test was made. Such warnings might seem to be unnecessary, but yet I feel that with the wide popularity that clinical calorimetry has suddenly met, they are in order. So too, is a warning against inaccurate technic in order. This has already been given by various writers. It will bear repetition, particularly for the reason that various instrument makers are exploiting the sale of metabolism apparatus and are trying to convince the practitioner that he needs a metabolism machine in his office quite as much as he does a stethoscope in his pocket. Furthermore, simplified metabolism apparatus of one sort and another is making its appearance in the advertising pages of our journals before it has been described in their scientific columns. The widespread application of calorimetry by persons who do not take the trouble to acquaint themselves thoroughly with the literature and technic of the procedure is fraught with danger, danger to the individual patient through faulty interpretation of results, danger to the profession at large through the publication of erroneous results, that is to say, to the reporting as evidence of a pathologic condition in the patient an abnormal finding which is in actuality the result of technical error.

I am frequently asked either by practitioners or by clinics whether they ought to set up a metabolism laboratory. I tell them that I cannot see that they are under any obligation to do so, and that whether or not it will be desirable for them to do so will depend on their special needs. The up-to-date clinic is really obliged now to make Wassermann tests; as I see, it is not at all in that sense obliged to make metabolism determinations. The metabolism determinations in the management of thyroid cases, for it is with them that it has its chief use, is in general a refinement rather than a necessity. We could undoubtedly take reasonably good care of typhoid patients if we were deprived of the clinical thermometer; so we can with our thyroid patients without a metabolism apparatus. The metabolism determination in the thyroid case is of less importance than is the thermometer in typhoid. Furthermore, it is easier to make inaccurate observations with a metabolism apparatus than with a thermometer. It is far better to make no metabolism tests than to make them inaccurately. But, with these warnings and limitations in mind, it seems to me that it can be said that, for the clinic or practitioner handling a considerable number of thyroid cases, facilities for making metabolism observations will be a help. They will give a somewhat more accurate conception of the intensity of the disease than will clinical observation alone; they will add a quantitative aspect to the impression of the case that will, to say the least, be of assistance; and in the differential diagnosis of borderline cases they will be very valuable.

The actual help afforded in thyroid disease can best be observed by some illustrative cases. My purpose at

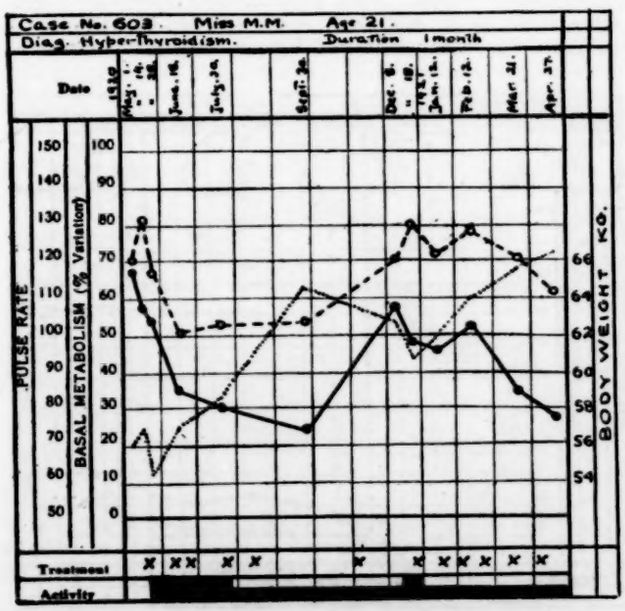

Chart 3.—Basal metabolism, pulse and weight in Case 3.

the present time is not in the least to discuss the treatment of hyperthyroidism. The cases that I shall present will be for the purpose of showing what the metabolism determination adds to our impression of a given patient's disease.

It is well recognized that one of the main functions of the thyroid is to regulate the intensity of combustion within the body. When it is overactive, the basal metabolism is increased; when underactive it is decreased, above in the former instance or in the latter below what the individual's level would be if he were in a normal state. The order of magnitude of these changes is somewhere in the neighborhood of a drop of from 20 to 40 per cent. in myxedema, and an elevation of from 20 to 40 per cent. in mild, 40 to 60 per cent. in moderate, and 60 to 100 per cent. in severe hyperthyroidism. The determination of the metabolism in the thyroid cases constitutes essentially a functional test of that gland.[4]

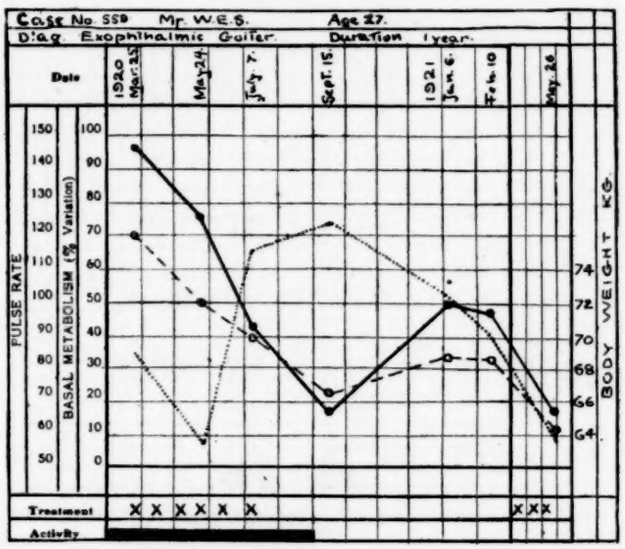

Chart 4.—Basal metabolism, pulse and weight in Case 4.

The progress of a febrile disease is rendered more easy of visualization by the clinical chart. The clinical chart in pneumonia or typhoid consists of pulse, temperature and respiration curves—these are the three factors of cardinal importance. A clinical chart in thyroid disease also helps visualization of progress. But here the factors of first importance are the basal metabolism, the pulse and the body weight. These three curves, when plotted, give us information of a similar nature to that given by the usual chart of the febrile patient.

It is the construction of such charts that has interested us most at the Massachusetts General Hospital.[5] A series of observations, when extended over a period of months or years, gives a very striking picture of the patient's progress. Such series, I believe, in general are of considerably more importance than isolated observations.

Let us consider a few of these by way of illustration. In the typhoid patient's chart the perpendicular lines represent days. The diseases of the thyroid are for the most part chronic. In our thyroid chart, therefore, the perpendicular lines are months; and while the typhoid chart at most covers a matter of a few weeks, the thyroid chart may well be extended for a period of years.

ILLUSTRATIVE CASES

CASE 1.—Chart 1 is that of a man with severe exophthalmic goiter of fourteen months' duration untreated and progressing unfavorably at the time, Nov. 18, 1919, he first came to our

4. Means, J. H., and Aub, J. C.: A Study of Exophthalmic Goiter from the Point of View of the Basal Metabolism, J. A. M. A. **69**: 33 (July 7) 1917; Basal Metabolism in Exophthalmic Goiter, Arch. Int. Med. **24**: 645 (Dec.) 1919; Basal Metabolism in Hypothyroidism, ibid. **24**: 404 (Oct.) 1919.

5. Means, J. H.: M. Clinics N. America **3**: 1077 (March) 1920.

clinic. The disease had begun while he was in the army. The chart shows at a glance the progress of this patient for a period of a year and the treatment that he received. Three operations were done by Dr. E. P. Richardson: November 24, ligation of the right superior vessels; December 1, of the left, and, March 24, 1920, a subtotal thyroidectomy. About three quarters of the gland was removed. After the ligation there was a slight fall in metabolism and pulse and a slight gain in

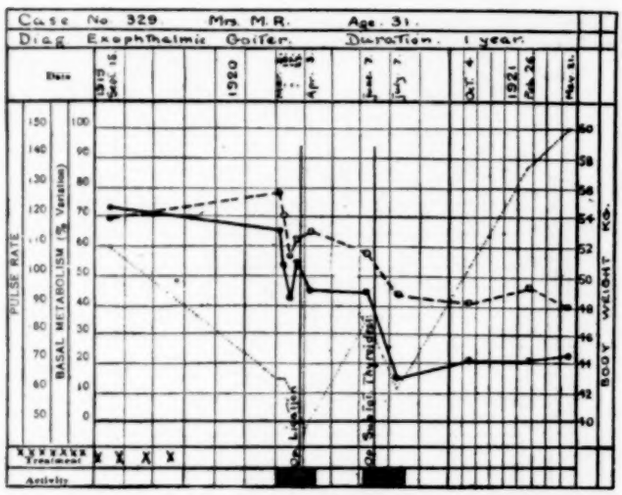

Chart 5.—Basal metabolism, pulse and weight in Case 5.

weight; after the thyroidectomy, a striking fall in metabolism, all of which occurred in the fortnight after operation. Six months after operation the metabolism was essentially unchanged, still being plus 32 per cent. The patient had gained weight and his pulse had fallen to a normal level. Clinically he was much better, but still had some nervousness, tremor and increased sweating. He was not yet able to do a full day's work.

CASE 2.—Chart 2 is that of a schoolmistress of 38 with a rather mild form of exophthalmic goiter which she had had apparently for only two months at the time she first visited the clinic. The chart shows her progress over a period of twenty-one months, during which time she received seven roentgen-ray treatments from Dr. George W. Holmes with absolutely nothing else in the way of therapy. She pursued her normal mode of life and continued with her teaching. Oct. 2, 1920, she was subjectively and objectively well, as, indeed, she also was on May 14, 1921, though at that time metabolism and pulse showed a slight upward trend. This rise may or may not be of importance. But it illustrates, it seems to me, the usefulness of the chart, for it puts us on our guard against a possible relapse which we might have missed on the basis of the clinical picture alone.

CASE 3.—Chart 3 is that of a girl of 21 with the characteristic symptoms of hyperthyroidism but with only a very slight fulness of the thyroid and with no eye signs. The picture was what one may call, for want of a better name, simple hyperthyroidism. Her chart covers a period of about a year. During that time she had been taking quinin hydrobromid, 5 grains, three times a day, and for about half the time ergotin, 1 grain, three times a day. As shown in the chart also, she had had partial or complete rest for a year. Roentgen-ray treatment was started, May 18, 1920. August 11, she had had five treatments, with a marked fall in metabolism and pulse and a gain in weight, and definite subjective and objective improvement. In the fall of 1920 she had a relapse with return to about the starting point. A second course of roentgen-ray treatment seems to be relieving this, much as it did in the first instance.

CASE 4.—Chart 4 is that of a man, aged 27, with severe exophthalmic goiter of a year's duration, who had been having complete rest and quinin hydrobromid for three months under the direction of Dr. Charles A. McDonald when he was referred to the clinic. His symptoms had begun the year before while he was serving in the navy. This patient received essentially no treatment but roentgen ray. Between March 25 and July 7, 1920, he received six full treatments. During this period he was not working but was reasonably active and had no real rest. There was a most astounding fall in basal metabolism and pulse, and gain in weight. There was a corresponding clinical improvement; this was so great that against advice he returned to work. His work, that of chauffeur on a fire truck, was hardly of a suitable sort for a man recently ill with exophthalmic goiter. The not surprising result was that he again became thyrotoxic, which is well shown in the chart. In spite of this he has continued at work and, even under these adverse circumstances, a second course of roentgen-ray treatment seems to be curing him.

CASE 5.—Chart 5 shows the findings in the case of a woman, aged 31, who had had moderately severe exophthalmic goiter for about a year at the time the chart was started. Eleven roentgen-ray treatments (seven before the chart was started) had failed to accomplish any clinical improvement or to reduce her metabolism below plus 65 per cent. It might be said, however, that she had followed her ordinary mode of life during this period. A short rest in bed in the hospital then reduced her metabolism some 15 points and, March 26, 1920, Dr. C. A Porter ligated the superior arteries on each side. Two months later the metabolism had remained at the lowered level, but had shown no further drop. Dr. Porter operated again and, June 16, 1920, did a subtotal thyroidectomy. There was a prompt clinical improvement after that and fall in pulse and metabolism. Eleven months after the last operation the metabolism was plus 24 per cent.; the patient had gained considerable weight and clinically was practically well.

CASE 6.—Chart 6 illustrates the effect of overirradiation in exophthalmic goiter. This patient, a woman aged 29, had a rather mild form of the disease which she had had for a year. Four roentgen-ray treatments were given between Jan. 16 and March 22, 1920, and from January 12 to February 11 she had complete rest in bed in the ward. She showed a marked clinical improvement and fall in metabolism and pulse. The treatment was stopped. April 28, 1920, she reported for observation. Within the last three weeks she had gained a great deal of weight; her face had become puffy and she com-

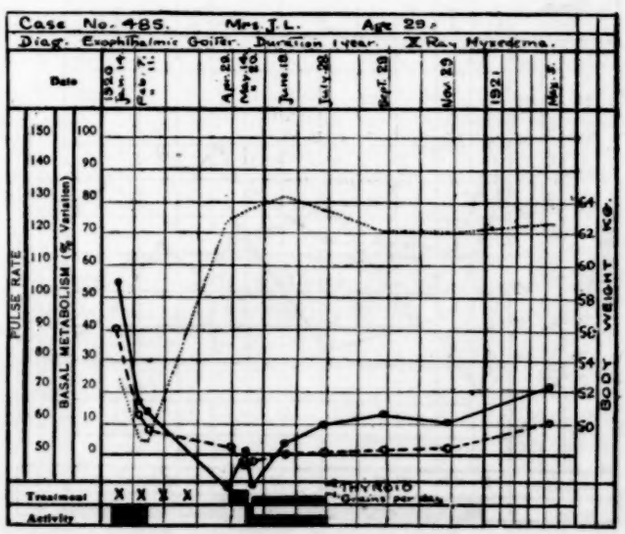

Chart 6 (Case 6).—Under "Treatment," the thyroid dosage is indicated by shading. The first dose employed was 1½ grains per day; the next, 1½ grains every other day.

plained of feeling dull and dopey. The picture was essentially that of myxedema. The metabolism was minus 11 per cent. She was started on thyroid gland, 1½ grains per day. May 14, her metabolism had returned to normal. The thyroid was stopped. May 20, the metabolism had fallen again to minus 11 per cent. Thyroid administration was begun again, but in a smaller dose, 1½ grains every other day. July 28, her metabolism was plus 10 per cent., and all symptoms of hypothyroidism had gone. The thyroid was stopped. She was

followed for nine months more. The metabolism never fell again, and no symptoms of myxedema returned; indeed, on the last observation, May 5, 1921, the metabolism was slightly supernormal, indicating that perhaps a return of her hyperthyroidism was impending, though clinical signs were lacking. This case shows from both the clinical and laboratory points of view that, in certain cases at least, irradiation really seems to lower thyroid activity. It also shows that in the

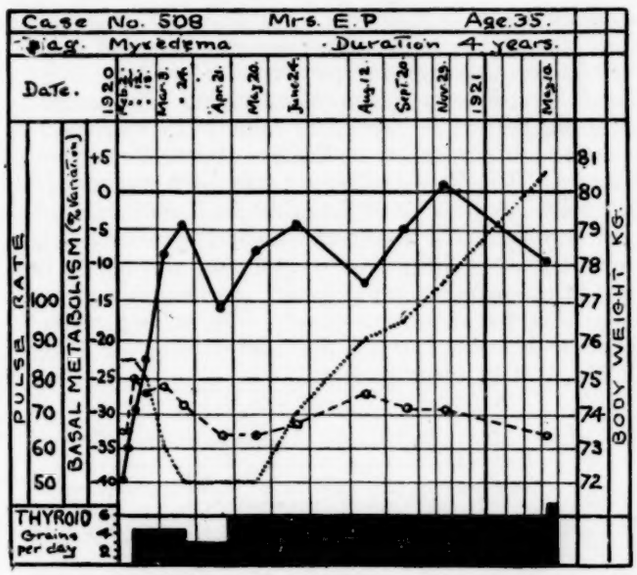

Chart 7 (Case 7).—In this and in Figure 8, "Activity" is not indicated. Both these patients pursued throughout a normal life. The dose of thyroid employed is indicated by the width of the black area.

roentgen-ray treatment of exophthalmic goiter the possibility of overtreatment must be borne in mind and guarded against. The very delicate response of the metabolism level to thyroid administration is also well shown by this chart.

CASE 7.—Charts 7 and 8 are of patients with hypothyroidism. Figure 7 is that of a woman, aged 35, with frank myxedema which had existed for four years. The metabolism was promptly returned to normal by thyroid administration. At the same time the weight fell and the symptoms improved. The effect of a reduction in thyroid dosage is shown in the chart, a fall in metabolism and pulse. The dose was again increased, with a return of the metabolism toward normal. This patient has been followed for well over a year. In the main her metabolism has been within normal limits, and she has been free from symptoms. At the time of her last visit, because of a slight tendency to subnormal metabolism and steady gain in weight, she was told to increase the dose of thyroid still further.

CASE 8.—Chart 8 also illustrates the control of thyroid dosage by metabolism findings. This patient, a man, aged 29, did not have frank myxedema; he had suggestive signs only: a tendency to gain weight, and some sluggishness, both mental and physical. He was found to have a subnormal metabolism and was started on thyroid; 4½ grains a day brought his metabolism to normal, then a decrease to half that dose was followed by a fall. The original dose was resumed and now for a year and a quarter his metabolism has been kept essentially within normal limits, and clinically he has been much improved.

COMMENT

These eight charts, it is hoped, will illustrate what to my mind is the chief rôle of indirect calorimetry in the clinic of today; namely, the quantitative estimation of thyroid function and the accurate representation of the effects of treatment, either those measures in hyperthyroid states which are designed to reduce thyroid activity, or thyroid therapy in conditions of hypothyroidism. In the latter, particularly, the discovery of the exact dose of thyroid gland which will make a given patient's metabolism assume and stay at a normal level is most fascinating.

Outside of thyroid disease, the metabolism determination as a diagnostic procedure or functional test does not play an important rôle. By that I do not mean to say that the study of a variety of pathologic states by calorimetric methods is not of fundamental importance. It most assuredly is; but such studies belong primarily to research, while the matter under consideration is the, so to speak, routine use of calorimetry in the clinic. The place of calorimetry in the investigation of disease does not come within the scope of the present paper.

Before closing, I wish to add merely a few words as to the metabolism determination in the field of differential diagnosis. From what has already been said here and elsewhere, it is obvious that when hypothyroidism or hyperthyroidism is suspected, metabolic studies will be of great assistance in the differentiation of effort syndrome and mild hyperthyroidism, for example, and of toxic from nontoxic goiters, or in the borderline hypothyroid conditions. In my hands it has been particularly useful in the recognition of the latter. Chart 8 is an excellent illustration of this.

One other direct clinical application is in the matter of obesity. Studies published elsewhere [6] have shown that in simple obesity the basal metabolism is normal. Such obesity is due, to my mind, to a disproportion between food intake and bodily activity, and not to any fundamental change in the rate of combustion in the body. In such persons the giving of thyroid raises the metabolism to an abnormal level, produces hyperthyroidism, in other words. The treatment, then, of simple obesity with thyroid is in my opinion pernicious. It relieves one evil by creating another. I have, too, been impressed of late with the very common use of thyroid by the laity for purposes of weight reduction. Personally, I think the sale of this drug except on prescription

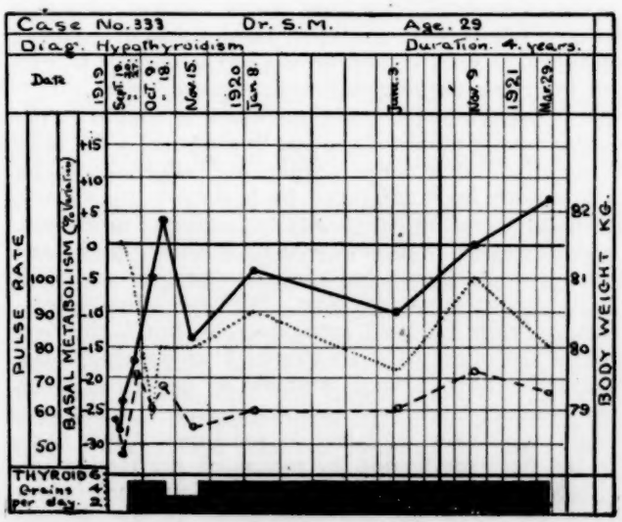

Chart 8.—Basal metabolism, pulse and weight in Case 8.

should be prohibited by law. Metabolism studies have convinced me that thyroid should never be given except to persons who exhibit subnormal metabolism.

By means of the metabolism determination, the case of simple obesity can be differentiated from the obesity due to endocrine disease. This applies not only to

6. Means, J. H.: J. M. Res. **32**: 121, 1915; The Basal Metabolism, in Obesity, Arch. Int. Med. **17**: 704 (May) 1916. Means, J. H., and Woodwell, M. N.: Ibid. **27**: 608 (May) 1921.

hypothyroid obesity but to pituitary as well. In hypopituitarism there is a reduction in metabolism level just as in hypothyroidism, though perhaps of lesser degree, so that calorimetry may help us in recognizing obesity of pituitary origin also.

Of diseases other than of the thyroid and pituitary in which there are alterations in basal metabolism, the most striking are the leukemias and severe anemias, particularly pernicious anemia. The significance of these changes, however, is as yet not clearly understood, and they have at present no routine diagnostic or therapeutic bearing, although it is altogether likely that later they may have.

In conclusion, I will simply reiterate that indirect calorimetry has furnished us with a quantitative test of the thyroid, with a method for clearly visualizing the progress of patients with thyroid disease, of accurately controlling the treatment of them, and of clinching the diagnosis in certain borderline cases. It also has thrown light on the nature of obesity and has furnished us with a means of distinguishing between simple and endocrine obesity, and has demonstrated the inadvisability of treating the former condition by the administration of thyroid gland.

THE BASAL METABOLISM IN FEVER*

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NEW YORK

The clinician has several definite and practical questions to ask regarding the basal metabolism in fever. He wishes to know whether he can calculate the total metabolism of a patient with a given degree of temperature in order to have a rational basis for the fever dietary. It is important for him to know whether there is anything abnormal in the metabolism of proteins, fats, carbohydrates and water. Being interested in the whole subject of fever, he desires information regarding the relative importance of the various factors which increase the metabolism in hyperthermia.

The answers to the questions must be sought in the voluminous literature of the last thirty years. We have at our disposal a large number of experiments on animals with fever produced by lesions of the central nervous system, by drugs and by artificial infections. These have been well reviewed by Richter,[1] and more recently by Barbour,[2] but they do not give us much help in our problems with man. We have a few experiments on men warmed artificially by hot baths, but in these the effect of the external heat outweighs the fever. We have a large number of experiments on fever patients made by the Zuntz-Geppert apparatus, Benedict apparatus and similar machines which measure the heat production by means of the method of indirect calorimetry. These have given us much information and have laid the foundation of our present knowledge of the metabolism in fever. They have certain disadvantages since the subjects are exposed to different environmental conditions and are more or less disturbed by the application of mouth pieces or masks.

The discussion in this paper will be limited almost entirely to the groups of fever patients studied in the respiration calorimeter of the Russell Sage Institute of Pathology in Bellevue Hospital, New York, between the years of 1913 and 1920. Patients and normal controls have been exposed to uniform conditions of environmental temperature and humidity. They have lain almost motionless on a comfortable bed in a quiet respiration chamber for periods of from two to four hours, and in some instances all night. The temperature has been read every four minutes by means of an electrical thermometer which lies about 10 cm. in the rectum. The heat production has been measured by the chemical methods of indirect calorimetry and by the physical methods of direct calorimetry which determine the exact heat loss by radiation and conduction and by the vaporization of water. Incidentally, we may note that the close agreement of these two methods proves that the law of the conservation of energy holds good in fever patients.

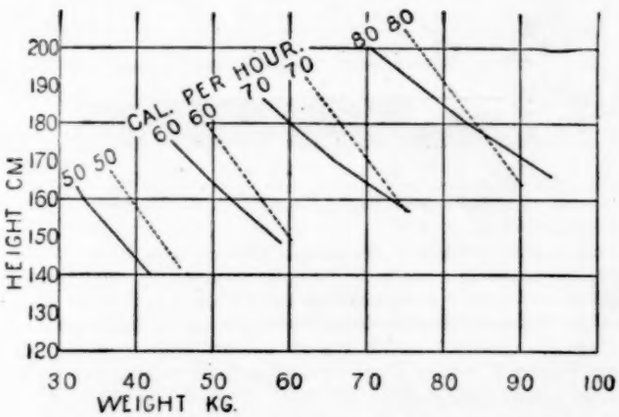

Chart 1.—A comparison of the normal standards for men 30 years old. The solid curved lines give the calories per hour according to the surface area chart and standards of Aub and Du Bois. The dotted lines represent the figures according to the Harris-Benedict multiple prediction tables. For instance, a man 30 years old, 180 cm. tall and 60 kg. in weight would have a predicted normal basal metabolism of 70 calories per hour according to the surface area curves, and about 67 calories per hour by the other method. The results according to the Harris-Benedict formula are lower, but the two sets of lines are almost parallel for this age group.

The published work consists of studies in typhoid fever by Coleman and Du Bois,[3] in malaria by Barr and Du Bois,[4] and in tuberculosis by McCann and Barr.[5] The unpublished work here presented consists of studies made by Coleman, Cecil, Barr and Du Bois in erysipelas,[6] arthritis[7] and the fever produced by intravenous injections of protein.[8]

Comparisons with the normal were made according to the usual method of the Sage investigators, who consider that the normal metabolism for a given age

* From the Russell Sage Institute of Pathology in affiliation with the Second Medical Division of Bellevue Hospital and from the Department of Medicine of Cornell University Medical College.
* Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Richter, P. F.: Fieber, in Oppenheimer's Handbuch der Biochemie.
2. Barbour, H. S.: The Heat-Regulating Mechanism of the Body, Physiol. Rev. **1**: 295, 1921.
3. Coleman, Warren, and Du Bois, E. F.: Clinical Calorimetry, Seventh Paper, Calorimetric Observations on the Metabolism of Typhoid Patients With and Without Food, Arch. Int. Med. **15**: 887 (May) 1915.
4. Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, Twenty-Eighth Paper, The Metabolism in Malarial Fever, Arch. Int. Med. **21**: 627 (May) 1918.
5. McCann, W. S., and Barr, D. P.: Clinical Calorimetry, Twenty-Ninth Paper, The Metabolism in Tuberculosis, Arch. Int. Med. **26**: 663 (Dec.) 1920.
6. Coleman, Warren; Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, Thirty-Second Paper, The Metabolism in Facial Erysipelas, to be published.
7. Barr, D. P.; Cecil, R. L., and Du Bois, E. F.: Clinical Calorimetry, Thirtieth Paper, Observations on the Metabolism in Arthritis, to be published.
8. Cecil, R. L.; Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, Thirty-First Paper, The Effect of the Injection of Foreign Protein on Metabolism, to be published.

and sex is proportional to the surface area.[9] Practically all of the subjects studied were between 20 and 40 years old, and the standard used for this age was 39.5 calories per square meter per hour.[10] If we express the matter graphically on a chart (Chart 1), we can show the curves for the predicted metabolism of normal individuals of different heights and weights. If metabolism were proportional to height, these lines would be horizontal; if proportional to weight, they would be vertical. If proportional to surface area, they would have the slant shown in the curved solid lines of the chart, and our results do agree with these curved lines. A purely statistical study of the normal basal metabolism by Harris and Benedict [11] has resulted in a height-weight-age formula. With a little calculation we can show their results for men 30 years old on this chart. It is significant that the dotted lines for the Harris-Benedict formula are parallel to the surface area curves.

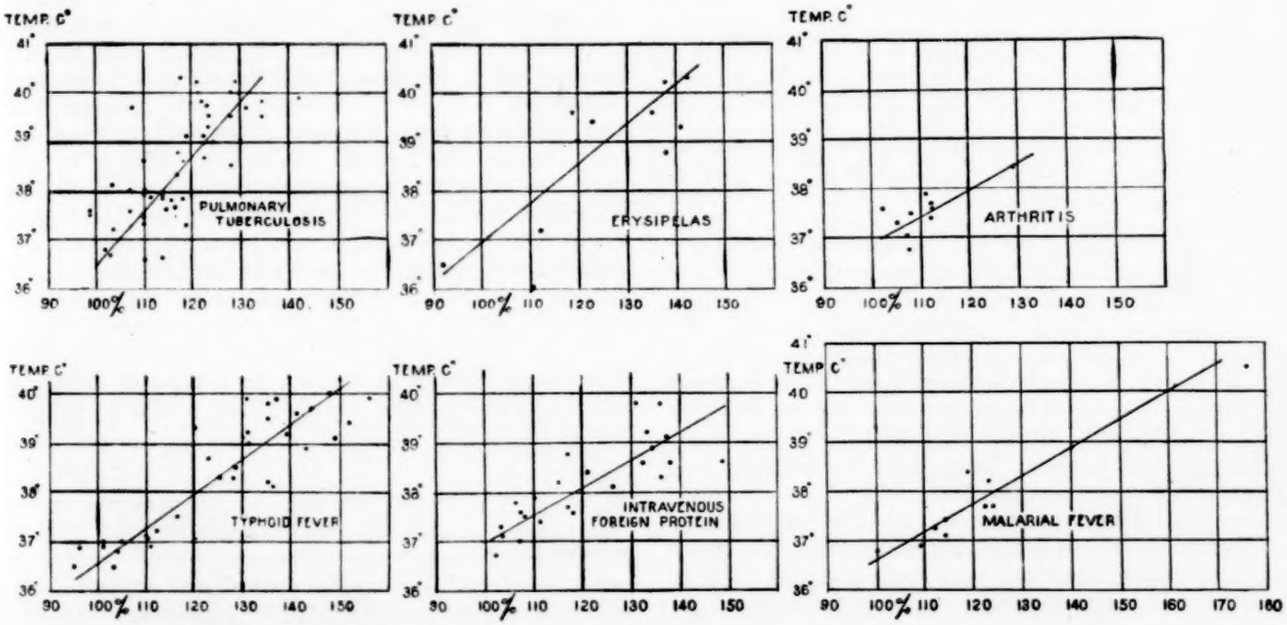

Chart 2.—Relationship of basal metabolism to temperature in various fevers. Ordinates represent rectal temperance in degrees centigrade, abscissas the metabolism expressed in percentages of the average normal; e. g., 150 equals 50 per cent. above the average. Each dot represents a calorimeter experiment of from one to three hours at the given temperature.

The studies of large groups of normal controls show that about 90 per cent. of normal men come within 10 per cent. of this standard; but a few who are apparently normal may show figures as much as 15 per cent. above or below.

Can we predict the metabolism as closely as this for any specified degree of fever?

Chart 2 shows the results in all the fevers studied in the calorimeter, expressed by the method used by McCann and Barr in tuberculosis. The ordinates show the rectal temperature in degrees Centigrade. The abscissas show the level of the metabolism in percentage of the average normal. The line 90 means 10 per cent. below the average; 150 means 50 per cent. above the average. Each dot denotes an experiment of from one to three hours at a given temperature level. The normal temperatures were obtained in afebrile periods or in the first eight days of convalescence. The diagonals are sketched to represent the direction of the swarms of dots. It will be seen that in tuberculosis the diagonal crosses the 40 C. line at a level of about 32 per cent. above the normal. In many of these patients there was enough undernutrition to account for a certain diminution in metabolism. In erysipelas the metabolism is a little higher for the same temperature. In typhoid fever, the line crosses the 40-degree level at 48 per cent. above the normal metabolism. In malaria and the fever following the intravenous injection of foreign protein, the metabolism is slightly higher. Of course, it is necessary to leave out the shivering periods in these two conditions. It is possible that some of the results in the high temperature following the chill are slightly affected by the previous severe muscular exercise.

Most of the patients whose metabolism is very high for the degree of temperature were typhoid or malaria patients with a high level of protein metabolism. Most of those with low basal metabolism were tuberculous patients with low protein metabolism. We know that protein increases the metabolism through its specific dynamic action, and this may explain the difference between the groups of patients. The ingestion of a large protein meal does not increase the heat production in typhoid fever, in which the protein metabolism is already high, but it does cause a striking increase in tuberculosis, in which the protein metabolism is at a much lower level. Although the increased protein metabolism seems to be a factor of some importance, we believe that it is outweighed by another and simpler factor.

We note particularly the similarity between fevers of greatly different origins, such as typhoid and erysipelas, malaria and intravenous injections. We are impressed by the importance of the nonspecific element in fevers. This is even more striking, if we group all the hetero-

9. Du Bois, Delafield, and Du Bois, E. F.: Clinical Calorimetry, Tenth Paper, A Formula to Estimate the Approximate Surface Area if Height and Weight be Known, Arch. Int. Med. **17**: 863 (June) 1916.

10. Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Nineteenth Paper, The Basal Metabolism of Old Men, Arch. Int. Med. **19**: 823 (May) 1917.

11. Harris, J. A., and Benedict, F. G.: A Biometric Study of Basal Metabolism in Man, Publication 279, Carnegie Institution of Washington, 1919.

geneous fevers in one chart (Chart 3). The continued diagonal line is here drawn from statistical calculations, and the dotted lines are placed to represent divergences of 10 per cent. from this average. Out of the total of 137 experiments in various fevers, 82 per cent. come within 10 per cent. of the average. In other words, the percentage variations in the metabolism for a given temperature are scarcely greater than in a similar group of normal individuals.

This surprising uniformity of results suggests at once that we are dealing with the law of physical

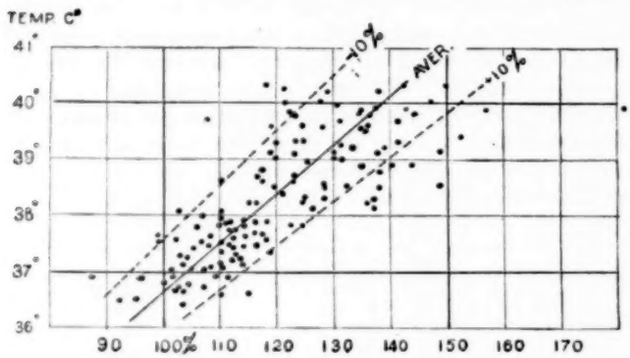

Chart 3.—Results in six different fevers grouped in one chart. The continued line shows the average and the dotted lines are drawn to represent metabolism 10 per cent. above and 10 per cent. below the average.

chemistry enunciated by van't Hoff.[12] For ordinary temperatures the van't Hoff law can be thus expressed: "With a rise in temperature of 10 degrees Centigrade, the velocity of chemical reactions increases between two and three times." In other words, the temperature coefficient is usually between 2 and 3. This means an increase of from 30 to 60 per cent. for the 3 degree rise from 37 to 40 C. Practically all of the fever experiments are within these limits, and the average line shows a temperature coefficient of 2.3.

Van't Hoff and Kanitz[13] give the temperature coefficients which show the rate of increase in a number of chemical reactions with an equal rise in temperature. If we plot these in exactly the style of the fever patients (Chart 4) we note that the lines have approximately the same slope. In other words, the reactions in a fever patient respond to a rise in temperature in a manner which resembles closely the chemical reactions in a test tube suspended in a water bath.

There is a tremendous gap between the simple reactions in the test tube and the complex oxidations in the diseased human body, and we should hesitate to compare them were it not for the large number of biologic reactions which show temperature coefficients between 2 and 3. Van't Hoff calls attention to the rate of carbon dioxid elimination in plants, which shows a coefficient of 2.5. Kanitz[13] gives a long list of similar coefficients for plant respiration, rate of isolated hearts, contraction of smooth muscle and the metabolism in cold blooded animals.

We have seen that the gross results in different fevers are strikingly similar. It is interesting to note the similarity in the details of the mechanism of the rise and fall of temperature in the chills of malaria and those which follow the intravenous injection of foreign protein. The first curve (Chart 5) shows the results obtained in a malaria patient by Dr. David P. Barr and myself. Before the chill the metabolism and temperature were normal. In the period of the thirty-four minute chill there was terrific shivering, and as a result the heat production rose to 216 per cent. above normal. After the chill the metabolism was increased by the hyperthermia, and then fell gradually as the temperature became lower. The chill was accompanied by no change in the heat elimination. The old idea that the rise in temperature is largely caused by a decreased elimination has been proved false. The rise is due to the increased heat production, and this is caused in part by shivering and in part by some chemical regulation, the nature of which is still in doubt.

After the temperature has reached its zenith, the elimination must, of course, exceed the heat production.

The curve of the rectal temperature does not always parallel the curve for the changes in the average body temperature. We shall never know the exact level of the average body temperature, because we cannot place thermometers all over the extremities and in the viscera; but if we know the differences between heat production and heat elimination, we can calculate how many calories have been stored in or lost from the body, using the method devised by Barr.[4] If we start the average temperature curve half a degree below that of the rectal temperature, we can then follow its changes. Apparently the region whose temperature is measured by a thermometer deep in the rectum shows a more rapid rise than the whole body, with its large mass of tissue near the surface and in the extremities.

The curve of the arthritic patient who was given an intravenous dose of 35 million dead typhoid bacilli is almost identical with that of the malaria patient (Chart 6).

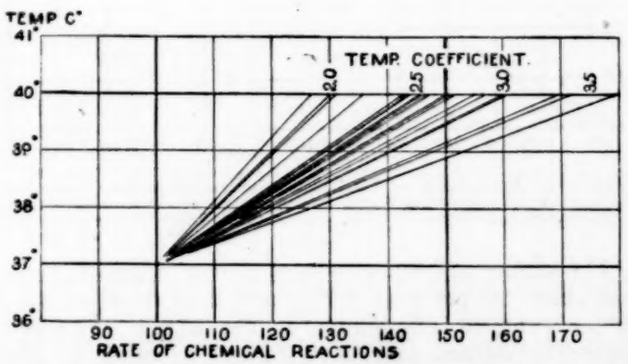

Chart 4.—The lines in this chart represent a number of typical chemical reactions taken from van't Hoff and Kanitz. The slant of the lines shows the increase in the rate of the reactions as the temperature is raised. Note that the lines correspond closely to those which represent the total oxidations in the human body.

A study of the respiratory quotients in various fevers indicates that there are no significant changes in the metabolism of fat and carbohydrate. Protein metabolism is high in fevers, and the protein minimum or "wear and tear quota" cannot be reduced to the normal level. This increase seems to be proportional to the toxemia, since it is excessive in patients seriously ill with typhoid and erysipelas, and comparatively insignificant in chronic tuberculous patients with the same degree of fever.

Balcar, Sansum and Woodyatt have produced excessive fever in dogs by depleting the water reserves

12. Van't Hoff, J. H.: Studies in Chemical Dynamics, Revised by E. Cohen, Translated by T. Ewan, Easton, Pa., Chemical Publishing Company, 1896.
13. Kanitz, A.: Temperatur und Lebensvorgänge in Biochemie in Einzeldarstellungen, Vol. 1, Berlin, Gebrüder Borntraeger, 1915.

of the body, and they infer [14] that an abnormal water metabolism may be the cause of fever in man. If this were the case, we should expect to find striking abnormalities in the total or percentage loss of heat through vaporization in febrile patients. A careful scrutiny of the calorimeter results shows no such phenomenon. The

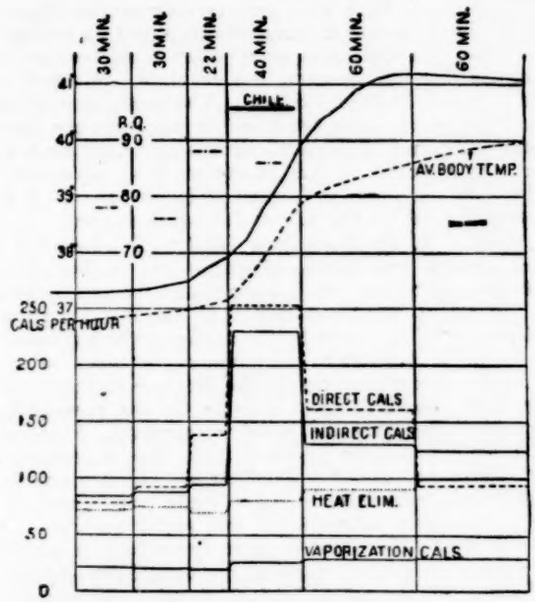

Chart 5.—Calorimeter results during a malarial paroxysm. The upper continued curve shows the rectal temperature.

water metabolism of fever patients corresponds closely with that of patients with an equal percentage rise in metabolism caused by hyperthyroidism.

Let us now answer the original questions. We can say that it is possible to estimate the basal metabolism of a patient by calculating his normal according to surface area standards. To this we should add about 13 per cent. for each degree Centigrade above the normal temperature (7.2 per cent. for each degree Fahrenheit). This should be increased by 10 per cent. in the case of toxic patients with great destruction of body protein, and by approximately 10 per cent. in all other febrile patients who are receiving much food. A further allowance of from 10 to 30 per cent. for muscular activity may be necessary if the patients are restless.

It is interesting to note that our practical calculations in the clinic are based on the law of the conservation of energy, on the surface area law of Rubner, on the laws of the specific dynamic action of foods as formulated by Rubner and Lusk,[15] and on the temperature law of van't Hoff.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. PLUMMER, BENEDICT, LUSK, BOOTHBY, MEANS AND DU BOIS

DR. GEORGE W. CRILE, Cleveland: I wish to assent to the statement by Dr. Boothby that the roentgen ray does not control exophthalmic goiter. We have often seen great benefit following roentgen-ray treatment, with recrudescence as a rule. At present we have no accurate and absolute basis for the classification of exophthalmic goiter. I do not think that the classification may be based safely on the histologic study of the thyroid. Usually it is impossible to make the classification by the variation in the basal metabolism rates. I operate on quite a few patients who do not show alteration in the basal metabolic rate, and yet we secure good clinical results. I think that the most important points are taking a careful history and making a careful physical examination. After that the basal metabolism rate is of great importance, but I would not regard it as being of pathognomonic importance, nor would I classify exophthalmic goiter wholly on basal metabolism rates. I was glad to hear Dr. Boothby say that he does not think basal metabolism measurement would be a true guide for projecting a surgical operation. We feel that the best guide, after all, is the judgment of the surgeon or physician. For example, the basal metabolism rate will tell you what rate of expenditure the body is making; but it does not tell you how much reserve there is in the myocardium, in the liver and in the central nervous system. If surgery will avail itself of all its opportunities of minimizing to the utmost degree the impression made on the patient, every patient will be operable.

DR. CHARLES H. MAYO, Rochester, Minn.: After all, the importance of the subject relates mostly to chronic diseases and especially to diseases of the thyroid, in the changes of basal metabolism incident to normal, hypothyroid or hyperthyroid function. Enough is now known concerning the thyroid, its function and diseases so that in severe types of hyperthyroidism, basal metabolism determination, while not the sole indicator of severity, is of importance considered with the symptoms. Without it psychoneurosis, in which the Goetsch or epinephrin test shows a low stability of the nervous system, altogether too variable a test for much dependence in the analysis of exophthalmic goiter, might be classified in the category of hyperthyroidism.

DR. JOSEPH AUB, Boston: We are just completing some work in our laboratory to see whether the tremor of hyperthyroidism or the tonus of the muscles could be the cause of the increased metabolic rate. The work was done on cats. Their normal metabolism was first determined. Thyroxin was then injected intravenously and intramuscularly and the effect watched by following the metabolic rate. When well

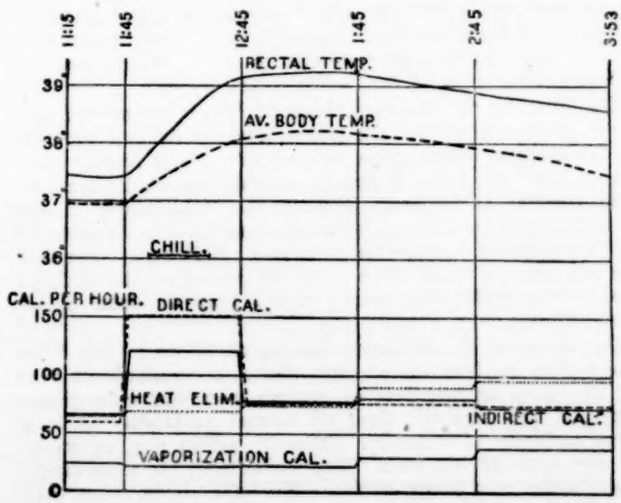

Chart 6.—Calorimeter results following the intravenous injection of 35 million dead typhoid bacilli. The percentage rise in metabolism does not appear so great because the chill occupied only a portion of the period between 11: 45 and 12: 45.

intoxicated, the animals were anesthetized with urethane, and their metabolism further studied. Its level remained approximately the same, in spite of the fact that the tremor of the muscles was absent and the muscles felt flabby. If later we cut all the nerves to the limbs, and so eliminated all tonus of these muscles, the metabolism did not return to its normal level. Therefore, the conclusion is suggested that muscular activity and tonus are not the main features in the high metabolism of hyperthyroidism, and this work supports the view that the body cells themselves increase their usual basal rate of oxidation.

14. Balcar, J. O.; Sansum, W. D., and Woodyatt, R. T.: Fever and the Water Reserve of the Body, Arch. Int. Med. **24**: 116 (July) 1919.
15. Lusk, Graham: Science of Nutrition, Philadelphia, W. B. Saunders Company, 1919.

DR. FRITZ TALBOT, Boston: It seems to me that true basal metabolism cannot be obtained in children under 10 years of age with the mouth and nose piece, but must be obtained in the respiratory chamber. It surely cannot be obtained in children 6 years of age. Consequently, I would give warning to draw no interpretations from findings obtained with apparatus using the nose and mouth piece, except in those children who have been thoroughly trained to the apparatus, so that there is no element of excitement, and those who can keep absolutely quiet. The second point I would like to make is that the interpretation of results in childhood is fraught with more dangers than in the adult. The reason is that childhood and infancy is the period of rapid change. The standards to be used change accordingly and looking at the chart of the metabolism per unit of body surface you will see that there is a very marked change in metabolism during the first year and a half or two years of life. Another point: Malnutrition in infancy is quite different from malnutrition in the adult. Two or three speakers have said that in malnutrition you expect a lowered basal metabolism. The reverse is the truth in severe infantile malnutrition (infantile atrophy). The basal metabolism is above the average, sometimes 60 or more per cent. Then, in regard to the subject that receives most attention, hypothyroidism and hyperthyroidism: I have recently been able to study two infants, 3 months of age, who clinically were early cretins; one of them had a basal metabolism of minus 18 per cent., and the other had a normal basal metabolism. One was in the state of hypothyroidism and the other was not. Finally, it is generally assumed that at puberty there is no increase in the basal metabolism. Two or three of Benedict's and my cases show an increase in the metabolism, and I have recently been studying selected girls from our outpatient department who at puberty have palpable thyroids. The tendency of this selected group is to show a definitely increased metabolism.

DR. GRAHAM LUSK, New York: I would ask Dr. Boothby to withdraw the definition, "specific dynamic action" of thyroxin. If the term came to be applied to such diseased conditions as manifest an increased heat production, the disturbances would then become "specific dynamic" diseases. It seems that this definition, which was coined by Rubner to indicate the increased heat production after the administration of food, had best be restricted to the significance which it has already enjoyed for twenty years.

DR. FRANCIS G. BENEDICT, Boston: Probably no one has given more attention to the extraordinarily difficult problem of determining the average temperature of the human body than has Dr. Du Bois. I wonder whether the wholly remarkable correlation he finds between the temperature of the body and heat production is based on rectal temperatures or on the computed average temperatures. It is easily seen that the cell activity would have to be considered on the basis of the average body temperature rather than the local rectal temperature.

DR. WALTER M. BOOTHBY, Rochester, Minn.: We have found that Du Bois' basal metabolic rate standards of normality based on the law of surface area are exceedingly accurate, and that the limit of normal variability is in a large majority of instances distinctly within plus or minus 10 per cent. of his zero. The consistency is exceedingly remarkable in a large series. We have made more than 23,000 determinations, and we hardly ever find a case with an abnormal basal metabolic rate that does not have a reasonable clinical explanation. In regard to what Dr. Crile said, it is obvious that, if he includes in his operative statistics for exophthalmic goiter the cases with normal basal metabolic rates, this factor, in addition to his beautiful technic, influences materially his mortality rate.

DR. JAMES H. MEANS, Boston: About the matter of body surface, the only thing I would like to say is that a study we have recently completed on the Du Bois, Benedict and Dreyer methods of judging of normality of basal metabolism shows that these three methods give almost identical results. I am often asked which method should be used. It does not matter. The result will be essentially the same. Dr. Crile spoke about the roentgen-ray treatment of goiter; I do not want to go into the subject of treatment. I do not want to say anything more now than what we have already said, which is that we believe that in certain cases there is more rapid improvement in clinical condition, and fall in rate of basal metabolism, pulse, etc., than one could expect as the result of spontaneous recovery. Spontaneous recovery exists, as everybody knows. The matter of recrudescence after roentgen-ray treatment has been mentioned. There are recrudescences. I have also seen recrudescences after surgery, after fairly complete operations, so that I do not believe the fact that recrudescences occur after roentgen-ray treatment means that the treatment has no place. In many cases it does no good; in others it does. The production of myxedema is the best possible proof that it may quiet the thyroid. It is easy to correct myxedema so arising by giving a little thyroid. As a matter of fact, in the cases we have seen the myxedema is transient, as I showed in one chart. I have seen several cases of myxedema following surgery.

DR. EUGENE F. DU BOIS, New York: Dr. Benedict has sounded a much needed note of warning in stating that the simplification of technic has not simplified the understanding of the subject of basal metabolism or the interpretation of clinical results. Time saved by the modern technical improvements should be devoted to the study of textbooks on nutrition. As Dr. Benedict suggests, the increase in the metabolism in fever should follow the curve for the average body temperature rather than the rectal temperature. Practically, there is little difference between these two curves, except during sudden fluctuations. Furthermore, we are unable to determine the actual level of the average body temperature, and it is therefore necessary to use rectal readings. The manner in which the metabolism in fever follows the laws which govern the rate of chemical reactions lends support to the adoption of the term "metabolic rate" introduced by Dr. Plummer.

DR. J. EARL ELSE, Portland, Ore.: During the last year and a half, I have been making a correlated study of the basal metabolic rate, pathologic findings, and clinical manifestations in toxic goiter. I have recently reviewed those cases in which the findings did not coincide, and have classified them into three different groups. In the first group are the errors in diagnosis. The patients had small goiters, with symptoms similar to those of mild toxic goiter, and a normal basal metabolic rate. These patients had other lesions, such as an early tuberculosis, or chronic infected tonsils, which produced the symptoms. I wish to take exception to the statement of Dr. Means relative to the value of basal metabolic studies. In the borderline cases, the basal metabolic rate is very important in diagnosis. The second group includes cases of toxic goiter in the stage of remission. Clinically, the patients show evidences of toxic goiter because, as has been shown experimentally, symptoms are present for a considerable period of time after the injection of thyroxin, while the basal metabolic rate remains elevated only for a comparatively short period of time. The third group includes cases of toxic goiter in which recovery has occurred so far as the thyroid and the excess secretion of thyroxin are concerned; but, on account of the patient having received an excessive amount of thyroxin over a long period of time, permanent lesions have been produced in the heart muscle, in the nervous system, behind the eyeball, and elsewhere, so that the patient still has a damaged heart, tremor and exophthalmos.

DR. A. E. ROUSELL, Philadelphia: I disagree with the speaker who minimized the value of estimating the metabolic rate. Many cases of hypotension are unrecognized. Some of them, with edema and the presence of albumin and casts in the urine, will necessitate the estimation of the basal metabolism for a correct diagnosis, just as the study of blood chemistry is necessary in various forms of nephritis. The study of basal metabolism is an important adjunct to the practice of medicine, as are other methods of precision and, just like these other methods of precision, it has its limitations. I have been particularly interested in the fact of the decrease of the metabolic rate under the use of the roentgen ray. I have reported the marked improvement and cures that have existed for as long a period as four or five years

in cases of toxic goiter treated by intensive doses of roentgen rays. Probably, the lighter doses produce just the opposite effect. Here the question is to produce necrosis, as one speaker represented the fact of producing myxedema is the best expression of the fact that the roentgen-ray treatment of toxic goiter is of extreme practical value.

DR. HENRY S. PLUMMER, Rochester, Minn.: The papers on this program were not supposed to deal with therapeutics. The authors have touched on the effects of roentgen-ray treatment, the excision of the thyroid, and they have discussed some of the relations of basal metabolism to fever and their application in clinical medicine. However, this was done largely from the point of view of basal metabolism, and it seems desirable to avoid diverging into the subject of the relative merits of therapeutic measures in the treatment of goiter. It is the obligation of every one interested in thyroid surgery to avoid the error of accepting basal metabolism as an index of the operability of the patient. It is the status of the patient relative to basal metabolism that is of much significance in determining operability in a case. It is the most fundamental measurement of the patient's condition. We have never seen, in the thyroids of pregnancy and adolescence, any evidence of the diffuse hypertrophy of the degree that is present in exophthalmic goiter and sometimes in the thyroids of laboratory animals. It seems probable that there is a relatively high rate of exhaustion of thyroxin during pregnancy and adolescence. Accepting this, a slight elevation of the basal metabolism during the period of pregnancy and adolescence, if present, does not necessarily indicate an elevation in the amount of thyroxin in the tissues. While it is possible that there are some other hyperthyroid states, we have not absolutely definite knowledge of any except that which follows the administration of thyroxin and those associated with adenomatous thyroids and exophthalmic goiter. The conservative stand at present is to assume that an individual having a normal basal metabolism is neither hypothyroid nor hyperthyroid. There is considerable evidence to suggest that there is rarely a short phase at the beginning, during the course of the disease, or following thyroidectomy for exophthalmic goiter in which the basal metabolism is normal, and a syndrome attributable to a perversion of the thyroid secretion is present. If true, we have no reason to believe that it often involves the question of differential diagnosis in cases in which the syndrome suggests hyperthyroidism, but in which the basal metabolism is normal. We have seen a large number of patients having relatively little complaint, no definite pathologic findings, and a basal metabolism ranging from 10 to 15 per cent. A study of this group indicates that these cases, although we cannot definitely classify many of them, cannot be considered up to the normal standard physiologically.

Early Diagnosis of Lead Poisoning.—Since systematic examination of the blood for granulated erythrocytes has been introduced to detect lead poisoning in its incipiency, the amount paid out for disability on this account has dropped from 133,439 to 5,143 marks in the Leipzig krankenkasse. For nearly two years there has been no claim for disability from this cause. J. Schoenfeld, in the *Zentralblatt für Gewerbehygiene* **9**:3, 1921, says that he regards as positive even less than 100 granulated erythrocytes per million. As the proportion grows larger or smaller, the course of the lead poisoning can be estimated. The certainty afforded by this blood index reassures the workmen, and gives a basis for enforcement of protecting devices, dustless paints, etc. With the exception of the band for hematoporphyrin in the urine, all other signs of lead poisoning, he adds, are not pathognomonic, or only accompany irreparable damage. A conference of physicians connected with German factories making lead paints was held recently at Halle. Among the problems proposed for further study were whether the absorption of lead could be prevented by ingestion of charcoal, kaolin or thick gruels; and whether laxatives, gardening and other physical work aid in evacuation of the lead. The speakers were unanimous in saying that the blood and urine tests had removed the danger from lead poisoning, reducing it to a question of mere cleanliness.

IN WHAT CASES DO UTERINE FIBROIDS STILL REQUIRE OPERATIVE REMOVAL?*

FRED. J. TAUSSIG, M.D.
ST. LOUIS

In four of the most important fields of gynecologic work, cancer of the uterus, fibroids of the uterus, inflammatory disease of the adnexa and disorders of menstruation, the last five years have witnessed a remarkable trend away from operative procedures. So pronounced has been this tendency that before long the general surgeon may leave us to our own resources, particularly if gynecologists cease to poach on the domains of their fellow surgeons. It may well lead to the better definition of gynecology as a specialty, which is the more needed because of the way in which many of our best universities have separated it from its twin sister, obstetrics. It is well, however, to hold a rein on our enthusiasm, lest the current of nonoperative treatment carry us too far in the opposite direction. I have, therefore, felt it pertinent to analyze from our present experience the indications for treatment in one of these fields, uterine fibroids. The basis for my opinions is (1) a study of personal experiences during the last three years, during which time I have had radium available for treatment; and (2) a review of the numerous reports on this subject from clinics here and abroad.

TABLE 1.—INDICATIONS AND RESULTS OF TREATMENT IN OPERATIVE CASES

			Indications for Operation							Results		
	Number	Average Age	Size	Pus-tube	Ovarian Cysts	Prolapse	Desired Children	Operation Preferred	Other Reasons	Good	Phlebitis	Death
White.....	24	41.9	4	1	1	4	3	3	8	22	2	0
Colored...	63	36	35	12 (5)	6 (2)	1	0	0	9	60	0	3
Total....	87	38	39	13	7	5	3	3	17	82	2	3

COMPARISON OF RESULTS FOLLOWING TREATMENT BY OPERATION AND RADIUM

Since January, 1918, I have treated, either by operation or with radium, 123 cases of uterine fibroids. A considerable number of additional cases were seen by me during this time; but either these patients did not require treatment or refused it for one reason or another. Of the 123 patients eighty-seven were operated on and thirty-six were given radium treatment. The analysis of indications and the results of treatment can best be shown in the accompanying tables. So far as I know, no one has heretofore attempted to differentiate therapeutic indications according to race. Certain striking differences between the negro and the white race are manifest. It will be noted that while only five out of sixty-eight negro women were found suitable for radium treatment (7.3 per cent.), the proportion among the white was thirty-one out of fifty-five (or 56 per cent.).

In explanation of these tables it should be stated that, when a tumor was large enough to extend more than half way between the symphysis and the umbilicus,

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

operation was advised, provided no contraindications, such as serious heart or kidney complications, existed. The bracketed figures under pyosalpinx and ovarian cyst mean that the condition existed in addition to the size of the tumor to justify operative removal. Under the head of "other reasons" in the operative group were included carcinoma of the cervix, 2 cases; submucous fibroid in vagina, 3; intraligamentous fibroid, 2; ectopic pregnancy, 2; pregnancy, 1; appendicitis, 1; wrong diagnosis, 1; tuberculous peritonitis, 1. In one case with mild hyperthyroid symptoms, I desired to avoid the castrating effect of radium and hence preferred a subtotal hysterectomy.

In the thirty-six radium cases, the dosage ranged from 800 to 1,750 mg. hours, with an average of 1,250 mg. hours. Usually 75 mg. hours were applied within the uterus in silver and brass for about sixteen hours. In three instances of somewhat larger growths, roentgen ray was used in addition to radium; but in one of these, the menorrhagia still persisted and the patient decided to be operated on. In ten patients the radium was applied in the vaginal fornix instead of intrauterine. Additional treatment was given in but one case. As to amenorrhea the rule was that in patients over 40, no further menstrual flow occurred after radiation, whereas in younger patients one or two periods occurred before cessation of flow. In some

TABLE 2.—INDICATIONS AND RESULTS OF TREATMENT IN RADIUM CASES

			Indications for Radium		Results		
	Number	Average Age	Size	Operation Contra-Indicated	Good	Complications	Failure
White.....	31	42.5	29	2	28	2	1
Colored.....	5	35.0	3	2	4	0	1
Total.....	36	41.5	32	4	32	2	2

of these younger persons, menstruation returned in from six months to a year, but was not excessive in amount. In three instances the flow never ceased but became normal in amount. Excessive bleeding was not the only symptom that justified treatment. Backache and pressure against the rectum were, in two instances, greatly relieved by the marked diminution in the size of the tumor. The diminution in the size of the tumor continued for several months after the original treatment. In this respect, the reaction of fibroids to radiation has a certain similarity to that of keloids in which a slowly progressive absorption has been noted for long periods of time.

One of the outstanding contrasts in these two tables is the frequency of complications in fibroids among colored women. This is due in part to the greater frequency of gonorrheal infection but also to the inherently earlier appearance and more rapid growth of fibroids in the negro race. I do not think this point has been sufficiently emphasized, though doubtless all gynecologists living in Southern states will bear witness to this fact. The age incidence in my series was more than six years less in the negress than in the white woman, and yet in spite of this fact large tumors reaching to the umbilicus, or above it, were about nine times as frequent among the colored as among the white race. These large tumors, particularly when associated with infected tubes, often affected the heart and kidney function, and their removal was attended with great technical difficulty resulting in a relatively high mortality (4.7 per cent.). At the St. Louis Negro City Hospital, we have occasion to see many women die without being operated on as a result of fibroids or complications produced by fibroids. When we consider how rarely we find a white women in whom fibroids have caused death, we must agree that the condition is a far more serious one in the negro race, and that palliative measures will only rarely be suitable for this group.

In one respect, however, the operative treatment of fibroids among white women presents greater danger. This is in the complication with thrombophlebitis. While I have not time to look up definite statistics on my fibroid cases in which operation was performed previous to 1918, I do not recall a single instance of thrombophlebitis in about 300 colored women operated on for fibroid during the last fifteen years. Among white patients the incidence of this troublesome complication is about one in every twenty or thirty cases. In Hornung's [1] recent analysis of the cases at Kiel, thrombophlebitis occurred fourteen times in 447 operations, about 3 per cent. In my own series, it occurred twice in twenty-four operations. This is to my mind an important additional reason for preferring radiation to operation in white women. At present, we have no way of preventing these unfortunate thromboses, and assuredly they are the bugbear of all gynecologists. With radiotherapy we do not have to fear this trouble.

From a practical standpoint we are constantly brought face to face with human fears and prejudices. The dread of the knife has in the past kept many patients from consulting a physician, or, after they have consulted him, it has made them put off treatment month after month. How often have we all heard the story, "Yes, doctor, I noticed the lump about six months ago, but I thought it would go away, and I knew you would say I should have to be operated on." If it is true concerning cancer that "in the early recognition and treatment lies the *hope* of cure," it is well to emphasize to our patients that in the case of fibroids "in the early recognition and treatment lies the *ease* of cure." It seems to me that already among the more educated classes this knowledge of other methods of treating fibroids besides surgery has permeated and has led more patients to come promptly for the relief of symptoms. Certain it is that many of my patients would have refused operation but did not object to the simpler, safer and usually equally effective treatment with radium. I should not be surprised if, in the course of the next decade, among white women, the percentage of cases in which radium was sufficient to effect a cure would increase from the present 40 to 50 per cent. to almost 80 or 90 per cent.

As to the expectancy of cure after radium or roentgen-ray treatment my own experience is too recent to justify any statement but there are ample reports from current literature [2] on this point: Zweifel, 222 fibroids; Clark, 150; Kupferberg, 325; Kelly, 182; Steiger, 59; Weibel, 53; Clarke, 50; Brettauer, 32; Miller, 26. These men using radiotherapy, either in the form of roentgen ray or radium, attained a symptomatic cure in all but forty-eight out of these 1,099 cases of fibroids. This would make a percentage of cure of 95.5 per cent., assuredly a sufficient justification for the more extensive adoption of this form of treatment.

1. Hornung, R.: Zentralbl. f. Gynäk. **45**: 381-389, 1921.
2. Gellhorn, G.: Am. J. Obst. & Gynec. **1**: 767, 1921. Detailed references to recent literature under this head.

CONTRAINDICATIONS TO RADIOTHERAPY

And now let me briefly state the contraindications at present existing to radiotherapy.

1. *Size.*—When the mass of the fibroid uterus is more than 12 cm. in its average diameter, operation is usually to be preferred. I think it better to employ this form of description rather than the distance of the tumor above the symphysis, since a relatively small uterus may be situated high and reach almost to the navel, whereas a large fibroid filling the whole pelvis may barely be felt from above.

2. *Location.*—Submucous fibroids protruding through the cervix, subserous fibroids of considerable size with a definite pedicle, cervical fibroids and intraligamentous fibroids had better be operated on. I do not, however, agree with Zweifel in excluding fibroids that are merely pressing against the rectum or bladder, provided they are not already partly wedged into the pelvis. In several instances, I have seen such pressure symptoms completely disappear after the shrinkage produced by radiation.

3. *Degeneration.*—Rapidly growing tumors, calcified fibroids, necrotic fibroids and those complicated with malignancy are not suitable for radiation.

4. *Age.*—There is no absolute contraindication to radiation on account of age except so far as the desire for children or a preservation of menstruation makes myomectomy or subtotal removal of the body of the uterus preferable.

5. *Complications.*—Pyosalpinx and ovarian cysts, except small retention cysts, are a positive contraindication in my opinion. Often we encounter difficulty in differentiating between a laterally situated fibroid that is somewhat adherent and an adnexal mass. It is well not to be in too great a hurry. In those cases in which there is still reasonable doubt, I would prefer operation to radiation, for it will take many more reports than those of Van de Velde [3] to convince me that radium treatment of pyosalpinx is anything more than a very dangerous experiment.

Such in the main are the contraindications to radiation. It is evident that only the careful diagnostician will be able to differentiate between the cases that are suitable for operation and those that are suitable for radiation. It is, therefore, greatly to be deplored if the general practitioner should, without further consultation, send all his fibroid patients to the roentgenologist for treatment, or even worse, if the roentgenologist should undertake the treatment of fibroids with roentgen ray before a careful pelvic examination by some competent person has been made.

As to the use of the roentgen ray in fibroid cases, I cannot speak from personal experience but from what I have seen of the cases treated by others with roentgen ray, I must share Clark's [4] decided preference for the intra-uterine application of radium in these cases. Radium may cause leukorrhea for a period of time; but it does not produce the pronounced intestinal derangements (vomiting, cramping, catarrhal stools) that so often follow roentgen-ray treatment. Furthermore, it seems to be more certain in its results. In two of my cases, roentgen ray in the hands of competent men had failed to produce amenorrhea, while a single application of radium promptly brought about the desired result. The diagnostic curettement which should always attend a radiation for fibroid makes the intra-uterine application of radium a simple therapeutic measure.

3. Van de Velde, T. H.: Zentralbl. f. Gynäk. 44: 994 (Sept. 4) 1920.

4. Clark, J. G.: The Treatment of Myoma Uteri with Radium, J. A. M. A. 73: 957 (Sept. 27) 1919.

CONCLUSIONS

Let me, in conclusion, emphasize these points: Radiotherapy of fibroid tumors is destined more and more to displace operation as patients learn to come early before contraindications to its use have arisen. In the negress, however, surgery will still have to be generally employed in fibroid tumors on account of their earlier, more rapid and more complicated development. Radiotherapy is a measure that has definite contraindications and the selection of cases suitable for such treatment should remain in the hands of the trained gynecologist.

ABSTRACT OF DISCUSSION

DR. GEORGE GRAY WARD, JR., New York: The use of radium in fibroids is a method of great value, but we should appreciate the limitations. We shall now get these cases very much earlier. Fear of the knife will not keep these patients away. And as we get them earlier they will consequently be more frequently in the child-bearing age, and the question of sterility will be a very important factor to bear in mind. Therefore, the operation of myomectomy must not be forgotten, as probably the most valuable method for use in child-bearing women who have fibroids. Radium has increased the importance of the operation of myomectomy. Formerly we feared overlooking a fibroid so small as not to be visible at operation, but which might later cause trouble. Now we need not fear this, because we have radium to fall back on should a tumor subsequently develop. Therefore, there would be no need of a second operation. We have also found radium of value in large fibroid tumors associated with severe hemorrhages, producing a marked anemia, so that the cases were not suitable for operation on account of the grave risk to life. In these cases we have used a preliminary application of radium to check the hemorrhage and allow the patient to build up and, therefore, become a better operable risk. We have used radium in the form of a tandem application in these cases, that is, two tubes are placed, one above the other, so as to irradiate a larger surface. In the case of large fibroids we use 1,500 mg. and in the cases of young women when we do not wish to cause cessation of menstruation, we have used from 200 to 500 mg. hours, according to the size and conditions. I wish to call attention to two important dangers: If the bladder is allowed to become markedly distended during irradiation, on account of its proximity to a small uterus, it will be affected through the uterine wall; and necropsy has shown that if the intestine is adherent to a small uterus, irradiation caused a burn of the intestine, which produced ulceration and death.

DR. WILLIAM J. MAYO, Rochester, Minn.: Radium treatment is not conservative. It is quite as destructive as operation, and sometimes more so, because it destroys the function of the ovaries as well as that of the uterus. If hysterectomy is performed, one or both ovaries can be saved in 50 per cent. of the cases. I agree with Dr. Taussig in his limitations on hysterectomy. Radium can be used in a large number of cases of the type in which hysterectomy has been thought necessary. But the desirability for continuation of the function of menstruation in young women must be considered, especially in young women who desire motherhood. If enough radium is used to cause shrinkage in tumors of considerable size, it is just as destructive as hysterectomy, or even more so. It has been urged against myomectomy that it is more dangerous than hysterectomy. Some years ago I looked up the records of 741 cases in which myomectomy had been performed in the clinic, and

found that the average mortality had been less than 1 per cent. Six hundred and nineteen of these myomectomies were abdominal, with only 0.6 per cent. mortality. The remainder were vaginal myomectomies with a little over 2 per cent. mortality. About half these patients were married. Twenty-one had raised one child each, and seven had raised two or more children. Fourteen of these patients were pregnant at the time of operation; eleven went to term and bore living children. The disturbance which occurs in fibroid tumors in women who are pregnant is usually due to changes in the circulation, and the operation is comparatively easy in these cases. Premature expulsion of the fetus occurred in but three of the fourteen cases, and none died. Only nineteen of the myomectomized patients had second operations, some of which were performed a number of years afterward. In the meantime, several of the women had borne children. Most of the second operations were for infections. Myomectomy is the operation of choice for fibroids in women under 35 or 40. Hysterectomy is best for women over 50 if there is a suspicion of malignancy, and for women having large tumors. Radium has a great field of usefulness for smaller tumors that cause hemorrhage at the menopause period.

DR. HENRY O. MARCY, Boston: At the International Medical Congress in Washington, in 1887, this subject was discussed with extreme care. I rather reluctantly felt obliged to ask Apostoli of Paris to come over and give his address on the application of electricity. I had been prejudiced against his method, perhaps unjustly, because Dr. Ephraim Cutter had devised a method somewhat similar, except that he thrust one pole into the large tumor through the abdominal wall and then applied this high current into the uterus. Apostoli had his application diffused through a water pad. Dr. Keith of Edinburgh had removed seventy-two large uterine myomas without a single death. He said, "I am sure we will see no more operations for the removal of fibroid tumors." Apostoli has settled the problem, and the curability is absolute, with entire safety. I asked Apostoli to come to my hospital here and apply the method. He did it. I was convinced I must be wrong. I purchased the apparatus and made 600 applications with the greatest of care, measuring the current and the time, and every patient insisted on it that she was a great deal improved. I did not find a single case in which I thought there was the slightest benefit, except in the hemorrhagic condition of the intrauterine type. This history shows a direct effect of the mind, of the patient's nervous system, on the up-to-date cure. I wish you would consider this in reference to the effect of radium treatment. It was almost exactly the same in its application with that of Apostoli. He has been forgotten, except in an historical sense. We are placing too much importance on the application of radium. I have sent a number of patients to experts without benefit. I have had serious criticisms on the results. I do believe that while radium is still in the experimental state we must not expect too much from its results. Fortunately, its high cost tends to keep it in the hands of only a few experts. It must be used with care.

DR. FREDERICK J. TAUSSIG, St. Louis: In fibroids of the uterus we can establish a routine that is in contradistinction to what I said as to the treatment of cancer. I think the treatment of fibroids of the uterus with radium can very well be extended to any person qualified to make a gynecologic diagnosis. As to myomectomy, I quite agree with Drs. Ward and Mayo regarding its value in younger persons. Yet, let me call your attention to the figures in my tables showing that in those cases that were suitable for radium, in other words, fibroids that were within the pelvis, in white women, the age incidence was 42½ years. In other words, there are relatively very few of these cases in which we can seriously consider an operation for the preservation of the function of conception. As to the incidence of thrombophlebitis, I have spoken with a number of my colleagues from the South, and their general impression is the same as mine, namely, that the incidence of thrombophlebitis among colored people is relatively very low. However, I trust that further information will come when more extensive statistics are available.

"WAR" NEUROSES AND ALLIED CONDITIONS IN EX-SERVICE MEN

AS OBSERVED IN THE UNITED STATES PUBLIC HEALTH SERVICE HOSPITALS FOR PSYCHONEUROTICS *

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At this time, more than two years after the cessation of the hostilities of the great war, the term "war" neurosis is virtually obsolete. Only occasionally are there now received for treatment cases presenting a "War" neurosis syndrome, and such as are received may be attributed to an attenuation and fixation of former symptoms. The symptom-picture today, then, is principally a neurosis occurring in ex-service men. In a large number of cases actual warfare would seem to have comparatively little to do with the production of the neurosis—the actual war experiences being less influential in the production of the present train of symptoms than the environment and the demands outside of camp life, which are further nurtured by response to the influence of the spirit of the times. This relates to the personal equation of each individual, and the degree of expression of symptoms has little to do with the severity of the actual war experience but is in direct proportion to the interpretation of that experience by the individual. Hence, a soldier whose total army life and experience consisted of one night in camp and ninety days in a hospital presents a more hopeless picture than many a full-fledged veteran of two or three years of most varied and arduous war experience. It is, therefore, the patient's conception of the situation and his attitude of mind toward that situation that develops the emotion which determines his reaction.

This is consistent with normal humanity. The abnormal is only an expression of hypo-emotivity or hyper-emotivity generating reactivity. Mental stability, including apperception, judgment and decision as psychologic factors, is a criterion for the distinction of the two states. We have, then, presented at this time a neurosis thoroughly commensurate with the neuroses

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* To this date the U. S. Public Health Service has maintained only two hospitals (No. 42 at Perryville, Md., and No. 37 at Waukesha, Wis.) principally or solely for the care of psychoneurotics. Since the author's observations were made mainly at one of these, a few remarks for purposes of orientation are in place. U. S. Public Health Service Hospital No. 37, situated at Waukesha, Wis., to the best of my knowledge holds the distinction of being the first institution devoted solely to the care and the treatment of the psychoneuroses. The institution was formerly a hotel sanatorium, known as "Resthaven," and was built some ten years ago at an expense of about half a million dollars. In 1919 it was acquired by the government, which since then has planned and is now executing extensive alterations to the end of making it a model of its kind. The plant, when completed, is expected to represent all that is most desirable and advantageous as suggested and accepted generally as adequate in the care, the treatment and the rehabilitation of the psychoneurotic. The contemplated total capacity of the hospital is 300 beds. Among its general assets it enumerates a fully modernized clinical laboratory, including studies in blood chemistry and basal metabolism; a thoroughly equipped roentgen-ray department, and an active dental section. Among its special assets are numbered an electrocardiographic station; a speech clinic presided over by an experienced specialist in speech defects; a resident psychologist; and, thoroughgoing rehabilitation adjuncts. The reconstruction work includes a quite uniquely equipped physiotherapy department with its various subdivisions; a progressive occupational therapy department, and an alert representation of the Federal Board for Vocational Training. The Red Cross is distinctively represented in its psychiatric case workers, and its recreational activities. Furthermore, the hospital has the fortunate advantage of six attending specialists in the professional fields of surgery, cardiovascular diseases, urology, orthopedics, eye, ear, nose and throat, and speech defects.

of civil life, being precipitated perhaps a little more quickly by virtue of certain sentimental conditions previous to going overseas, occasionally with additional violence and actual warfare at or near the battle-fields abroad, and the excessive sentimental conditions persisting since having returned to home ties. These conditions, perhaps, influence the patient further by furnishing him a seemingly legitimate excuse for the state which he finds himself in, the productive elements of which obtain the same as for a neurosis in civil life and are expressed by the formula of "pressure versus personal resistance." Patients with a persistence of the true war-syndrome usually respond to psychotherapeutic treatment readily, and hence their prognosis is ordinarily favorable under proper management. Occasionally the immediate symptomatology of present-day cases gives certain reactions a self-engendered mild military coloring. The reason for this is, of course, obvious.

The cases are grouped in this hospital under the headings included in the official nomenclature of the U. S. Public Health Service and are reported under the diagnosis decided on at the time of the patient's discharge from the hospital and not under the tentative diagnosis often applied at the time of the patient's admission. The official nomenclature purposes the psychoneuroses to be classed under the terms psychasthenic type, neurasthenic type, hysterical type, and the anxiety neuroses. These types may exist more or less alone and uncomplicated, or complicated, with admixtures and concomitants of one or more types, or with tendencies expressing a mild symptomatology in other directions. They also frequently occur, of course, in the presence of fundamental and coexisting organic conditions which may be mere factors in the case or true concomitants. Thus, we recognize in one man a neurasthenia per se, in another a neurasthenia with mental subnormality, in another a neurasthenia with hypochondriacal tendencies, and in still another a neurasthenia with a chronic interstitial nephritis, or other organic factors, and again a neurasthenia with coexisting organic conditions, such as chronic tonsillitis, bronchitis, colitis or impaired sight. Tension states of anticipation, timorousness and anxiety are usually symptomatic and concurrent residuals which have been carried over and in a few instances somewhat accentuated, but more frequently attenuated. Inadequate personality traits and eccentricities are very common. Psychopathies often appear as concomitants. The effort syndrome, or so-called neurocirculatory asthenia, appears occasionally—usually symptomatic and often associated with vague vagotonic manifestations. Very occasionally the real effort syndrome is present apparently uncomplicated and so marked that even moderate exercise (ten knee stoops or fifty hops) will exhibit excessive exhaustion, dyspnea, cyanosis, tachycardia, excessive perspiration, etc. This, however, appears to occur only in individuals of a particular makeup, namely, that expressing subnormal organic capacity. Real exhaustion is otherwise scarcely ever seen. Syndrome and neurosis symptom-pictures of concussion and of gassing appear not infrequently in the personal histories of the patients thus far studied.

Elements of malingering are often present and more or less persistent, usually in the form of subconscious or coconscious malingering, which forms have been accepted as a normal reaction quite universal in young children and quite persistent in the simple minded, for the reason that the child has not yet learned to bear with equanimity responsibilities which are to be a part of his normal relationship to society, whereas the simple minded has not the ability of such aquisition. Many patients ordinarily classed as psychoneurotic present mental subnormalities from the dull normal type back to the high grade imbecile. When such as these demonstrate elements of malingering, they are regarded as not being of the criminal type, even though they may otherwise present many delinquencies or possibly other criminal tendencies.

PENSION NEUROSIS

An element, however, of pronounced importance and becoming continuously more noticeable is the presence of a recently acquired pension neurosis. It now frequently expresses itself as the predominant factor in a symptom-picture complex. This, again, can be regarded as the expected outgrowth of the recent spirit of the times. So much has been said about compensation for the ex-service man, his care and rehabilitation that the individual with feelings of inadequacy or real inadequacies naturally gravitates in the direction in which relief from responsibilities and the stress of life has been promised or may be assured. The heterogenous attempts on the part of welfare workers, however good their intentions, have unfortunately done much to foster that attitude. In due deference to these workers, it must be remembered that many were without adequate experience and had little or no training at the time the United States declared war. Consequently, and in keeping with the predominating impressions of the horrors of the European conflict, sympathy and sentiment was dispensed excessively and without adequate knowledge of its applicability to the individual soldier or the probable result of its leading to the production of certain stereotype states which are now afflicting a very large majority of the patients entering the hospitals of our country. It is not at all a new aspect in human history. It might be well maintained that the greater bulk of charitable endeavor, by virtue of its being misconducted and misdirected, grossly miscarries and not only utterly falls short of its intent but actually does damage. This result can not be entirely obviated because we are dealing with human beings, and as such no one is infallible.

Stimulated by the horrors of the World War, but without an adequate conception of the work that medical men are called on to accomplish, and with little or no rational understanding of the choice or of the refinement of the methods to be used, public sentiment, as was to be expected, went far afield. This is now very evident from the results in hundreds of individual cases. While some are benefited, others remain entirely indifferent; and to each soldier accrues such results as his individual capacity is capable of, which may be good, bad or indifferent.

Discipline is the keynote in the success of army life, and yet the response to discipline to one man means loyalty, to another punishment; and there is no common ground between the two situations possible for either presonality. The adequate personality type of individual and the inadequate personality type of individual act and react entirely dissimilarly and quite opposed to each other many times under exactly the same stimuli; hence, the precipitation of dissimilar results in entirely similar situations. And consequently a single standard of approach by these multiple wel-

fare agencies in their multiple activities, before, during and since the World War has resulted in both temporary benefit and lasting harm. For instance:

A recent patient admitted to this hospital for treatment after two years of continuous efficient work since his discharge from the army comes to the hospital apparently solely because he has just learned, through a welfare organization, of his legalized privilege to become a beneficiary of the War Risk Insurance Act. The patient is mildly neurotic congenitally but shows no other symptomatology and had been handling his problems satisfactorily since his discharge from the army.

Let me cite another instance:

B. C., aged 21, with mental deficiency, enlisted, Aug. 29, 1918, did not go overseas, and was discharged, May 26, 1919, at Camp McPherson, Ga. Two days after being discharged he had reached home. Two days later he had gone to work at his old job as "laborer," at which he continued for some fourteen successive months. During that time he even added to his responsibility by becoming married. Next he fell under the well meant influence of local welfare workers and was sent to this hospital, Aug. 18, 1920, with the complaint: "There is nothing wrong with me as I can see. I eat pretty good—sleep fine—bowels all right—no headache—no pain—no one or nothing bothers me in any way." During the patient's residence in the hospital his wife gave birth to a son. The patient was discharged from the hospital, September 13, after many personal requests for discharge. A notation on the case reads: "Patient is a typical good natured man without apparent vicious tendencies." Now, since his hospitalization we get numerous reports from the same welfare association which sent him to this hospital of his not being willing to work at all steadily, at times working very little, failing to provide adequately for his wife and child, and continuously soliciting funds from the welfare organizations.

This simply expresses, as I conceive it, the danger of a break in the continuity of lives susceptible to the adoption of deplorable habits of reaction. This sort of break is more or less inevitable, perhaps, in most of the lives of such individuals, but usually comes later on at the age from 35 to 45, perhaps when the children of the family have grown to a self-supporting age, or are able to contribute to the general maintenance of the family, when the father quits and becomes more or less dependent, or at least resigns his responsibility.

The recent rapid growth of pension neurosis as expressed by the patients in this service is remarkable—much more noticeable as time advances and we recede farther from the acute neurotic manifestations accredited to the effects of warfare. In the vicious cycle occurs most assuredly a knowledge of the War Risk Insurance Act, which knowledge is being continuously more thoroughly disseminated among the ex-service men. This neurosis obtains not only in the constitutional psychopathic inferior group but also in many others whose industrial efficiency and natural desire for work and the concurrent responsibilities of life have never been very high. A large number of men whose industrial efficiency during all their industrial years has never exceeded $30 per month are naturally quite satisfied to enter a hospital of this type on a complaint of "nervousness" and "weakness" and that they "get dizzy," and thereby to remain and to draw $80 per month compensation together with board, room, multiple free entertainments and other considerations.

Although these patients are conscious of overdoing their real physical infirmities they are not truly criminal malingerers because of their faulty understanding which makes them feel that such is their just due. For this reason, or by virtue of their natural habit of oversublimating, many of them are so confident in that opinion that they insist that what is offered them by the government in return for their overestimated past military services is not good enough for them. They will frankly tell you not only that the food is unpalatable and the beverages unpotable, but also that the hospital is an unendurable and inhospitable "joint," and even not infrequently add that the government should be ashamed to ask any ex-service man to come to such a place. Yet, if you suggest that the hospital has probably done for them all that is possible and mention that their discharge is being considered, they will wire to their congressman in Washington, stating that they are being thrown out of the hospital because their doctor does not like them—or some equally flimsy excuse, and thereby start a commotion along the whole official line. This, of course, represents the acts and the reactions of the inadequate personality type of individual whose apperception is faulty, who cannot see things as they are, and who cannot be persuaded to accept them as others see them nor to view them in the verifying light of experience, judgment and wisdom. This represents the class of patients which one can scarcely do anything with or for, because of the intense fixation obtaining by virtue of the common tendencies prevailing in the uncritical makeup of him who believes the things which please him and rejects those which do not.

OTHER NEUROSIS FACTORS

Perplexing situations often arise in the treatment and management of these cases. Particular group conditions frequently exist. In addition to the recently growing pension neurosis group, another group has been present and prominent continuously since the opening of this hospital. The particular condition occurs among foreigners, especially Italians, Greeks, Austrians and Poles. It is most pronounced in Italians, but in all the personal equation is very similar and so persistent that there is little chance for modification or correction. One of the fundamentals of the condition seems to arise from a general belief that the United States is a very wealthy country and that its government is due and destined to provide for them for the rest of their lives. These people are often unable to demonstrate any somatic maladies. They do not show psychopathies in the usual sense of the word, but their attitude is so persistent and usually so consistently free from somatic factors that I frequently facetiously refer to these patients as sufferers of "Italianitis."

We also have a similar composite which may be referred to as a "Red Cross neurosis"—not that I would make any criticism of the great work done by the American Red Cross, for it comes about as well through other welfare agencies and is produced by the desire of the ex-service man to avail himself of every opportunity that might enhance his welfare. These patients too frequently have no pride—but a great deal of vanity. They are willing to accept any assistance for which they need to expend no actual physical effort. They believe in a divine right of assistance from the Red Cross and other welfare organizations, and will accept anything and everything from cigarets to a furnished flat, and to get these they are induced to overestimate their somatic symptoms and in some instances to manufacture them; but the influence of the spirit of the times on this man's personality makes

him feel that he is thoroughly justified in doing this and the thing soon becomes a habit.

The service is burdened with many rounders of this type who represent many, many types of individuals. Some are vicious malingerers, but many are unconscious of any improper motive. They are a distressing problem to the management of a hospital, to the district supervisor, and to the War Risk Bureau. They have not, many times, a legitimate difficulty; and yet, if they are dismissed from one service they will immediately get into another, and because of their own belief in their symptoms or their own misinterpretation of their symptoms they succeed in getting into another hospital, getting more attention and deriving more profits not strictly belonging to them. This situation, I think, has been thoroughly recognized by the profession at large. Because of the multiple complaints made by these patients they have been directed from one physician to another for examination, nearly always with negative results. But let it be repeated that often the patient honestly

CLASSIFICATION OF CASES TREATED AT THE HOSPITAL

	Classification *	Number
243	Constitutional inferiority	10
244	Constitutional psychopathic state	8
287	Dementia praecox (unclassified)	6
288	Dementia praecox, catatonic type	2
289	Dementia praecox, hebephrenic type	1
290	Dementia praecox, paranoid type	8
398	Exophthalmic goiter	3
468	General paralysis of the insane	2
628	Hysteria	71
628	Hysteria, with organic factors	6
628	Hysteria, with concomitants	3
628	Hysteria, with admixtures	5
845	Neurasthenia	43
845	Neurasthenia, with organic factors	14
845	Neurasthenia, with concomitants	4
845	Neurasthenia, with admixtures	3
851	Neurosis, gastric	5
857	Neurosis, traumatic	22
1006	Psychasthenia	8
1010	Psychosis, hysterical	2
1011	Psychosis, intoxication (inebriety, consisting of alcoholism and morphinism)	4
1012	Psychosis, manic-depressive	6
1341	Tuberculosis, chronic pulmonary	4
2549	Psychosis, with constitutional psychopathic inferiority	1
2552	Constitutional psychopathic inferiority, with admixtures	5
2553	Mental deficiency, without psychosis	5
	Miscellaneous †	30

* The numbers in the left-hand column are those of "Nomenclature of Diseases and Conditions," U. S. P. H. S., 1916.

† Among these thirty miscellaneous cases occur a number of organic cardiac cases, several respiratory cases, a few uncommon organic affections, and isolated cases of the more unusual neurologic and psychiatric conditions.

believes that he is thoroughly incapacitated, and he is so mainly because he cannot conceive the difference between his individual equation and one that is more efficient.

Under inadequate personality traits we recognize psychosomatic inferiority or constitutional inferiority without the markedly morbid psychopathic manifestations. The constitutional psychopathic inferior is usually that ingrate liar, social misfit, and delinquent so well known to all psychiatric workers. Occasional cases represent individuals reacting at the level of the constitutional psychopathic state. Mental subnormality and mental deficiency have already been referred to, both appearing very frequently and quite usually dominating the symptom-picture of the individual case, and rendering prognosis more or less hopeless as these states usually predispose to delinquent and criminal tendencies.

The 281 cases treated in this hospital from its opening, July 10, 1919, to the end of the fiscal year June 30, 1920, were classified according to the accompanying table.

PROCEDURE AT THE HOSPITAL

The general problems involved in the study of these cases is primarily the study and understanding of each case individually, the individual psychosomatic entity, the detection of organic disease as pathology or physiopathy, to determine when such changes are found, the actual degree of disability in function and its relation and bearing on other somatic states, to determine whether it can be cured, relieved or condoned with or without residuals, and by what means alterations may be brought about. These problems lead to every degree of diagnostic and therapeutic detail, and hold within them the possibilities of many interesting studies.

Together with the somatic side of the equation comes the psychic, and one must determine at what psychobiologic level the patient is reacting and to what extent this level can be modified to meet the necessity. Is the patient cooperative or lacking in cooperation, can he be induced to cooperate, or does he persist antagonistic or indifferent; has he an inalienable fixation on some organic malady that does or does not exist without somatic importance? Does the whole picture represent a neurosis by virtue of suppression, repression, compensatory states, regression or dissociation? Does the patient desire to recover from this present condition, or is he satisfied to remain indefinitely in his present state? By what means can the patient be appealed to? This requires at times considerable unwritten ingenuity, and one does not always succeed on the first approach. But a failure at first approach is seldom fatal because one usually learns of the other open avenues or, if none are apparent, it may be advisable or necessary to employ one's forces directly against the resistance in continuous bombardment until it is broken down and thus overcome.

Without going into details that are a matter of common experience, it will be apparent that in each case differential diagnosis is paramount. A thorough analysis of all components of probable morbid import must be carried out with painstaking care. Those elements of the individual personality expressing the psychobiologic level at which the patient was reacting at the time of the first manifestation of his difficulty, and the further psychobiologic level at which he is reacting at the time of his admission to the hospital, are factors of which at least a partial understanding must have been arrived at before therapeutic management can be expected to prove successful.

In this hospital we endeavor to analyze every one of the individual symptoms, and estimate their importance to one another and to the whole or any part of the composite whole. This is augmented by the administration of all classes of applicable tests and diagnostic methods known to general and special medicine. The final results of such studies are from time to time reviewed and discussed in a conference of all members of the hospital staff.

Under the head of therapeutic management are obviously classed all such methods as are usually recommended and adopted in special therapeutics. The first effort made toward the rehabilitation of these ex-service men is on the physical side, if any physical disease is at all apparent. Such efforts are supplemented by psychotherapeutic persuasion, suggestion and reeducation, and all other practical methods are applied and persisted in, together with work, amusement, distraction, recreation, and what other efforts seem to be

indicated or are necessary to be instituted to remove or modify the patient's malady or special difficulty. The final results, however, in these cases are very dissimilar. Work with this class of patients is not the most encouraging. A few patients are cured, many are relieved, many of them refuse treatment and are discharged at their own request, some desert from the hospital, others refuse treatment or refuse in any way to cooperate. Many patients move from one hospital to another, either on the same pretext or by introducing a new symptomatology. They leave one hospital and immediately proceed to another, where they also stay only a short time. They thus often fail in every way to cooperate or to receive any essential benefit from their observation, attempt at supervision, or offer of treatment. The reason for this attitude has already been adequately referred to. Careful study of the personal history, supplemented by observation of cases in hand, leads one to feel that one is not treating a disease but a personality. The study of personality, though engaged in by able men for several generations, is still in its infancy; its modifiability is still governed only by the requirements of each individual case.

It is the policy of this hospital, so far as possible, to maintain a case as long as treatment is necessary, and to accomplish in the least possible time the greatest amount of benefit to the patient. This cannot be fully accomplished readily, as one must make extensive alterations in the personal equation. One must create in his patients a desire to get well and so encourage that desire that they are willing to help themselves. A predominating tendency among these patients is to be quite satisfied with their present condition and to blame their physician for everything in the world—except their own presence. They respond very slowly to advice, and reluctantly get about doing anything personally constructive. A few very satisfactory patients come in with a desire to get well and make wonderful effort to accomplish that which is explained and outlined, and usually promptly succeed in getting well. Others are able to learn to condone certain conditions that cannot be removed, and hence they go out quite at *their normal* capacity. The period of hospitalization, however, which is required to bring about these results is rather long. We rarely have a patient under observation and treatment less than thirty days. Patients are more frequently under treatment three, and occasionally six months. On a few occasions, hysterics have entered the hospital and within a few hours have been relieved of their incapacitating manifestations and sent home. Not a few others for similar conditions have entered the hospital, and within a short time have discovered that if they remained in the hospital they would lose their malady and hence, in terms of probable monetary considerations, deemed it selfishly advantageous to sever their relationship with the hospital as soon as possible. Thus, in point of type of case and therapeutic requirement, the proverbial variation is in no sense wanting.

SUMMARY

The psychoneuroses met with in the U. S. Public Health Service hospitals are more the neuroses of *ex-service* men than they are the neuroses of *war*, and as such their symptomatology is becoming progressively more like that of the civilian neuroses.

In grouping the neuroses of ex-service men, the common nomenclature for the psychoneuroses has been adhered to and, when various elements with a war coloring have occurred, they have been added as admixtures or concomitants of the symptom-composite. The latter include the therapeutically stubborn pension neurosis, and that even more unyielding psychic syndrome seen in ex-service men of foreign birth and characterized by a parasitic incapacity born of the patient's unalterable opinion that the discharge of his patriotic duties merits governmental benevolence for the rest of his days.

The therapeutic management of the neuroses of ex-service men is beset by many problems. In the solution of these problems, many difficulties are encountered; but a fair proportion of favorable results are being obtained.

ABSTRACT OF DISCUSSION

DR. SMILEY BLANTON, Madison, Wis.: Dr. Benton, in making his diagnoses and drawing his conclusions, did not content himself with a one-sided examination either from a mental or a physical standpoint. Because of the unusual equipment of the hospital, as well as the attending specialists, Dr. Benton was able to make a complete study of each case from a physical standpoint. He added to this a thorough study of the patient's personality. Dr. Benton's emphasis on the fact that the neuroses are really due to lack of adaptation to life, often caused in the war cases by a break in continuity, and that the physician must concern himself not so much with the disease but with the personality, accentuates a forward looking phase of our work which is sometimes neglected. Dr. Adolph Meyer, at a recent meeting of the American Psychiatric Society, called psychiatry 'critical common sense." Dr. Benton has used judgment in studying and treating his cases. He has taken the best from Freud, Adler and Jung and mixed it with critical common sense. We cannot regard a man as a series of organs or think of his difficulties as being caused alone by syphilis, congenital or acquired, or other subtle organic lesions; but, having exhausted all means of physical diagnosis, must go forward, as does Dr. Benton, and treat the personality. In treating the personality, one must adjust the individual to life in such a way that he can lead a healthy existence. As Robert Louis Stephenson so well expresses it: "We cannot cut the Gordian knots of life, but each must be smilingly unraveled."

DR. WILLIAM HOUSE, Portland Ore.: The men who spent a few weeks in camp, met with minor accidents and now want the government to support them as long as they live are creating a great pension problem. Extreme care must be exercised to avoid injustice to any person who really served, and the benefit of the doubt should always be given the claimant. Most of the men I have in mind suffer from constitutional psychopathic inferiority. Sanatorium care, because of the present public attitude, is often necessary though dangerous in that it may serve to perpetuate illnesses we aim to cure. The United States Public Health Service expects us to estimate the degree of disability from which they suffer. How can one estimate the degree of disability of a neurasthenic when on every side we see neurasthenics successfully conducting large businesses and others, apparently no worse, giving up and doing nothing? I predict that in time large corporations will require neurologic examinations of all employees who are to engage in dangerous occupations, as a consequence of which better results will be obtained from state industrial compensation and similar acts.

DR. EDWIN W. HIRSCH, Chicago: The trouble with the public health service is that they try to "mill" men in and out and not handle them as individuals. It has been asked of what use it was to win the war if we lost the world. Of what use is it if we make a diagnosis and lose the patient? The eye, ear, nose and throat man sees only his division, and the heart man sees cardiograms, but it is only the specialist in nervous and mental diseases who sees the man, and if we treat the man and not the disease, I am sure there would be many recoveries. I have had the opportunity of seeing the work Dr. Benton has done at Waukesha.

Many men cured thereby are being sent out to dig a ditch or split a log. Dr. Benton puts confidence in them and before long they are cured. By making the treatment individual, he gets results.

DR. FRANK R. STARKEY, Detroit: We have had neuroses dating from the Civil War, and there have been other events in the lives of individuals that have produced profound impressions. I used to meet an old man who had been in the Civil War; when he was asked what his business was, he would reply that he was a medal of honor man. He had performed an unusually heroic action at the battle of Gettysburg, and for this he was given by congress the highest military award, and that even changed the man's personality. Previous to that he was industrious, a good provider to his family, and a useful citizen. Since then he has been "a medal of honor man," and he has not earned his living for the last fifty years. In many individuals who have met with an accident, their whole life revolves about that. A profound psychic shock can produce a complete change in personality. I think it is incumbent on the medical profession to try to erase these impressions from the minds of the men who have experienced these changes in continuity, especially those who have been disturbed by the great event of the World War, and direct them back into normal channels of thinking. Try to give them a more nearly reasonable sense of proportion so that they may again take up their regular field of activity and become useful citizens rather than a burden to the government.

DR. CHARLES R. BALL, St. Paul: The method of dispensing compensation in the war neuroses is at present in a deplorable condition and seems to be getting worse rather than better. The experience of other countries where compensation in industrial injuries has been paid as long as the patients continue with their symptoms and claim disability has been most unsatisfactory. Nonne says that this plan of paying compensation in Germany in injuries occurring in industry is making the German working man a neurotic. It is not good for either the physical or moral well being of the individual receiving it. If our concepiton of compensation neurosis is correct, which is, that behind the symptoms is the motive, and that the symptoms stand in the service of the motive, and the motive is consciously or unconsciously compensation, we are doing the worst possible thing for our neurotic soldiers. Endeavoring to bring about a recovery in such cases under present conditions is comparable to attempting to cure a case of poisoning by administering more poison. This would be regarded as rather an absurd and impossible procedure.

DR. C. R. WOODSON, St. Joseph, Mo.: I think a mistake has been made by the government in not examining these men before accepting them for service in the army. Men were inducted into the war who had been treated for epilepsy, those who were feebleminded, and those in whom there was a strong ancestral taint. They are now demanding compensation, and if they are passed on by a war risk board as not deserving, they will pass to the Red Cross and come on again and get before two, three, our and five war risk boards with the possibility of finally being found eligible to compensation. Many of them are not properly fed; too many of them do not want to get well. If you talk about their getting better, or being not suitable cases for compensation, that is not satisfactory. It is the same with the old soldier coming up for his pension; he limps, has a long face and an air of profound misery, but after he receives the pension, he may be observed to be very much better.

DR. JOHN F. HERRICK, Ottumwa, Iowa: A man was blown up on the battlefield by a shell explosion, thrown about 30 feet, and was covered by dirt. He was brought into the hospital suffering from nerve shock and with a marked general tremor. This continued, although the man had not been injured physically beyond a shaking up. Remembering some experiences in civil life, I told him his injury was purely mental; he had seen the shell coming and had believed he was going to be killed, and this profound impression had sunk into the subconscious and was causing the symptoms from which he was suffering. I told him that if he could get rid of that impression he would get bodily relief; if he could make himself realize that he really was not injured, his tremor, etc., would disappear. He stopped shaking and went about his work. On the other hand, when I saw an officer tell a man, "There is nothing the matter with you; get out and go to work," it made him worse. These men have received a profound impression on the subconscious memory, and it is necessary to show them how the impression is implanted; and by analyzing that with common sense, the thing clears up.

DR. GEORGE H. BENTON, Waukesha, Wis.: Our experience is a common one, for these patients are very similar all over the United States. The difficulties under which we labor are pretty well understood. Many unfortunate and many perplexing things come up. Congress has not the slightest idea of the facts of the situation and is influenced by individual political interests. Many stories are going about of the abused ex-service men standing on the streets without home or provisions. The psychoneurotic enjoys being in the center of the field, getting attention and sympathy. Many things could be done that would help these patients and the men attempting to help them. We have little or nothing to do with the so-called shell shocked man. I have always maintained that the man actually shocked from concussion got well or succumbed. Any little unusual experience was termed shell shock during the war by the man wanting to be eased of the responsibilities of life. Dr. Ball referred to the thing I called popular hysteria, which has added to the troubles of those handling the war risk benefits. In Waukesha we give attention to all somatic factors; we give the most thought and spend the most amount of work in treating the man's personality.

QUANTITATIVE ESTIMATION OF THE TOTAL PROTEIN IN THE CEREBROSPINAL FLUID*

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AND
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Increase in protein is probably the earliest and most constant abnormality noted in the cerebrospinal fluid under pathologic conditions. Not only does protein accompany even the most sluggish meningeal inflammatory process, but venous congestions are also accompanied by the appearance of protein in the cerebrospinal fluid in excess of normal. Protein excess may then be an index not only of an exudative meningeal process, but also of the degree of permeability of meningeal vessels under pathologic or abnormal physiologic states. In the one case the protein is of exudative, in the other of transudative origin.

With its diverse sources of origin, then, protein determination becomes of fundamental importance as a nondifferential test. No other test wholly supersedes it, and certainly no differential protein test wholly displaces it. And yet for years we have been satisfied with performing rough qualitative tests, the results of which were frequently construed as "positive" by one observer, "negative" by another, varying with the degree of experience, shades of light, size of test tubes, and other factors, more or less uncontrolled. It was the desire to place protein determinations in figures which led us to seek the aid of a chemist, and Dr.

*From the Neurological Department Laboratory, Massachusetts General Hospital.
* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

Denis[1] elaborated a method which has proved satisfactory and not too difficult of application. Briefly, the method consists of precipitating the fluid protein in a colloidal state by means of sulphosalicylic acid, and reading by means of a colorimeter against a standard prepared at the same time from a blood serum solution of known protein content. The percentage of error by this method was found to be less than five.

This technic has been carried out exclusively by one of us (H. E. F.) during the last year, and approximately 2,100 readings have been made. The method has, we feel, abundantly justified the extra amount of time consumed; in many ways the figures obtained have been of value.

First, and obviously, the quantitative method has served to control the quicker and less accurate methods. Time and again preliminary estimations of protein said to be "normal" have been changed to a definite "increase," and occasionally the reverse has been the case. While the borderline between normal and pathologic will always exist, we feel that by means of quantitation the line is more closely drawn.

Second, we have found a value in following the protein content of the fluids from patients under treatment for neurosyphilis. While much has been written concerning the cell count, colloidal gold test and Wassermann reaction under treatment, little has been said with reference to protein. By this method it is indicated that protein begins to fall early under treatment in all forms except paresis; in the latter it may even increase, although the cell count is dropping.

It was our interest in studying fluids from different loci of the subarachnoid space which made a more exact method of protein determination imperative, especially in the early diagnosis of spinal subarachnoid block by tumors and other pathologic states. Not infrequently a fluid is obtained by lumbar puncture which is slightly abnormal in protein content, but which might, and frequently does, pass as of no significance. When, by means of cistern puncture, we begin to compare the fluid above with that below, a difference of more than the slightest degree is found to be of importance. We have found such comparative readings of great value in the diagnosis of cord tumor, as significant as, and of more practical value than, the dramatic xanthochromic fluid with massive coagulation.

While protein values in different pathologic states are of only relative worth, certain disease entities or conditions do appear to give fairly constant readings. A preliminary table has already been published from this laboratory,[1] the averages in which we now believe to have been too high. The accompanying table, based on a much larger number of tests, supersedes the previous one.

COMMENTS ON TABLE

From more than 2,100 quantitations from approximately 800 patients, we have used 429 of these from as many patients in making up the table. They were not chosen to conform to any preconceived idea, but only if the history, symptoms and laboratory findings permitted of a fairly definite and accurate diagnosis. Only one reading from each patient has been used, although many have had from six to twenty readings.

I. *Normal.*—The average is within the limits set by other observers, but somewhat wider range has been found in our series than most workers record. There are so many physiologic and non-neurologic pathologic conditions which exert a greater or lesser influence on the normal content of the spinal fluid that it is hard to draw a sharp line. However, we feel very strongly that any total protein quantitation above 40 mg. per hundred c.c. is distinctly pathologic.

TOTAL PROTEIN IN CEREBROSPINAL FLUID

	Number of Cases	High, Mg. per 100 C.c.	Low, Mg. per 100 C.c.	Aver., Mg. per 100 C.c.
I. Normal (no affection of central nervous system demonstrable)	48	38	16	25
II. Syphilis of the Central Nervous System:				
Tabes:				
1. Active, untreated	31	150	22	78
2. Active, treated (tests still positive)	24	174	29	54
3. Active, with general paresis gold solution curve (untreated and treated)	18	129*	38	74
4. Inactive (symptoms stationary; tests essentially negative)	10	45	17	30
Paresis (untreated and treated)	7	153	50	89
Optic atrophy (untreated and treated)	18	238	19	74
Cerebrospinal Syphilis:				
1. Meningitic type (average, 253 cells)	4	118	89	99
2. Active (average, 26 cells)	12	218	28	73
3. Inactive (average, 3.5 cells)	6	56	26	43
Latent syphilis	3	114	37	65
III. Non-neurologic Syphilis:				
1. Primary, active (blood positive)	3	45	31	38
2. Secondary, active (blood positive)	11	60	20	31
3. Tertiary, active (blood positive)	10	51	18	35
4. Inactive (blood negative)	13	56	20	34
IV. Vascular Hypertension:				
1. With symptoms of old cerebral lesions (hemiplegia, etc.)	13	150	20	63
2. With symptoms denoting recent cerebrospinal lesions	12	95	20	51
3. Without evidence of cerebral lesions (uremia, etc.)	14	133	22	61
Vascular Disease with Hypotension:				
1. Chronic myocardial insufficiency	1	...	..	40
2. Stokes-Adams syndrome (old cerebral infarction—necropsy)	1	...	..	77
V. Epidemic Encephalitis:				
1. Active stage	27	274	21	67
2. Convalescent	6	50	20	36
VI. Poliomyelitis:				
1. Acute	3	81	67	75
2. Inactive	1	...	..	23
VII. Meningitis:				
Tuberculous	10	252	68	150
Acute forms (streptococcic and pneumococcic)	5	923	64†	364
"Serous"	2	87	67	77
VIII. Degenerations of Central Nervous System:				
Paralysis agitans	5	74	20	43
Multiple Sclerosis:				
1. Progressive	15	108	15	48
2. Inactive	4	93	21	48
Infection (?) of spinal cord (diffuse myelitic type)	3	247	42	119
Friedreich's ataxia	1	...	..	19
IX. Brain tumor, with increased intracranial pressure	3	100	25	64
X. Brain abscess	1	...	..	100
XI. Miscellaneous:				
Epilepsy (no pathologic lesion known)	11	50	17	29
Myasthenia gravis	1	...	..	19
Toxic amblyopia	3	80	26	49
Retrobulbar optic neuritis	1	...	..	20
Scorbutus	2	67	34	51
Hydrocephalus (communicating)	2	24	15	20
Acute systemic infections (typhoid and pneumonia)	2	21	19	20
XII. Combined Cistern and Lumbar:[2]				
1. Normal:				
Cistern	7	36	19	23
Lumbar	7	42	19	29
2. Block, with Hydrodynamic Evidence:				
Cistern	11	83	20	39
Lumbar	11	1112	85	341
3. Block, without Hydrodynamic Evidence:				
Cistern	6	160	19	52
Lumbar	6	800	62	296
4. Progresive myelitides:				
Cistern	4	100	24	59
Lumbar	4	160	50	96

* One case presumably belonging to this group but undoubtedly complicated, gave 523 mg.

† Only one case so low; next lowest, 125.

II. *Syphilis of the Central Nervous System.*—Tabes: Although both the upper and lower limits in the treated active cases exceeds those of the untreated active cases, it will be noted that the average in the former is markedly lower. The average of the active

1. Denis, W., and Ayer, J. B.: A Method for the Quantitative Determination of Protein in Cerebrospinal Fluid, Arch. Int. Med. 36: 436 (Oct.) 1920.

cases presenting paretic colloidal gold curves—untreated and treated—seems to confirm the contention of many writers that Lange's test is more or less of a quantitative protein test. To this we cannot accede, as the same curve is given in conditions other than general paresis, especially multiple sclerosis, in which disease the protein readings are more nearly normal. The inactive cases show some variation, the average being within normal limits.

Paresis, Untreated and Treated: The striking feature of these figures is that while the high limit is not as high as in some other central nervous system syphilitic conditions, the low is the highest of the entire syphilitic groups, excepting the meningitic type, and the average is also the highest of the infectious disease encountered except the meningitides.

Optic Atrophy, Untreated and Treated: The wide variation here is due to the inclusion of both early untreated and treated cases, some of which have been quiescent for years. In patients favorably responding to treatment, the protein decrease is the first sign usually noted, and the quantitation here is especially valuable in prognosis.

Cerebrospinal Syphilis (clinically and from laboratory findings, progressive and nonprogressive types): The meningitic type with an average cell count of 253 gives the highest average, although the range is much less than Group 2, with an average of 26 cells. Both of these types usually have positive spinal fluid Wassermann reactions. The inactive type with low normal cell count and usually negative fluid Wassermann reaction, nevertheless, gives a protein average over 50 per cent. higher than normal.

Latent Syphilis of the Nervous System: Patients never having had any neurologic symptoms, but with positive laboratory findings, are included in this group. The average number of cells of the three patients was 18; while a wide protein range is seen, the average is over two and one-half times the normal average.

III. *Non-Neurologic Syphilis* (no sign of symptoms of neurologic syphilis).—the patients in the three classical stages all had positive blood Wassermann reactions. The inactive cases had received enough treatment to give negative blood Wassermann reactions. The spinal fluids gave a normal cell count and negative Wassermann reactions, and no globulin ring was recorded. It is of interest to note that while the average total protein of each of the four subdivisions was within our normal, the cases presenting a primary lesion had the highest average. The greatest variation was found to be in the secondary stage of the disease.

IV. *Vascular Hypertension.*—With symptoms of old cerebral lesions, such as hemiplegia and internal ophthalmoplegia, cases range from low normal to six times normal, averaging over two and one-half average normal.

With symptoms denoting recent cerebrospinal lesions, a shorter range is given with a somewhat lower average.

The fourteen patients without evidence of cerebral lesions (uremia, cardiorenal vascular, etc.) had an average systolic blood pressure of 179, average diastolic of 105. In these cases the protein range is wide and the average over twice normal.

Of the thirty-nine cases in these hypertension groups, only nine gave normal readings.

Vascular Disease with Hypotension.—One of these patients had chronic myocardial insufficiency and one Stokes-Adams syndrome with cerebral ischemia. The former had increased proteins, which may have been caused by former arterial hypertension or damage. The latter at necropsy showed a cerebral infarction undoubtedly following a slowly forming thrombus. His symptoms had been noted for a year and a half with remissions.

V. *Epidemic Encephalitis.*—The wide extremes in the active stage are worthy of passing note. The average here is two and one-half times the normal. In the convalescent patients the average is high normal.

VI. *Poliomyelitis.*—The three acute cases give a fairly uniform high total protein content, with average three times normal.

VII. *Meningitis.*—Tuberculous: These fluids were taken from early and late cases, but even in the early cases showing slight pleocytosis the lowest recorded protein was double a high normal, the average being six times average normal.

Acute Forms: Protein regularly increased, giving as a group the second highest average of the entire series. The one patient with the low protein content had a proved streptococcic meningitis. Three protein determinations made on this patient within eight days were all low. But for this case the average of the other four would have been 524 mg. per hundred c.c.

So-called "serous meningitis" includes those cases with meningitic symptoms but without a corresponding pleocytosis or positive cultures, in which recovery took place. It is assumed that in these cases the protein increase is of transudative rather than exudative origin.

VIII. *Degenerations of the Central Nervous System.*—Paralysis Agitans: While the average in these patients is not high, it is sufficiently high not to be ignored. Some of the patients were advanced in years, and a cardiorenal vascular condition may partially account for the high readings.

Multiple Sclerosis: The variations in both the progressive and the inactive cases are similarly marked, and the two averages coincide. In seven of the nineteen cases the content was within normal limits.

Infection (?) of the Spinal Cord: These were cases showing a rapidly progressive, diffuse and extensive—myelitic process of unknown etiology.

Friedreich's Ataxia: The one case shows a low normal protein reading.

IX and X. *Brain Tumor and Brain Abscess.*—To these groups we desire to add more determinations before making any definite statements. However, from the brief series we are led to surmise that tumors and abscesses located in or very near the cortex will give an increased total protein.

XI. *Miscellaneous.*—Epilepsy: All cases of known or demonstrable pathologic lesion were omitted, the so-called "idiopathic" epilepsies alone being chosen. An average only slightly higher than our normal average is given. It would be interesting to know what variation exists in the individual cases immediately following an attack and at some later period. Unfortunately, the time relation of rachicentesis is unknown to us in this series.

The remaining cases of this group need no comment.

XII. *Combined Cistern and Lumbar.*[2]—These patients presented clinical signs and symptoms which might have been interpreted in the light of cord compression, partial or complete. Included in the "nor-

2. Ayer, J. B.: Puncture of the Cisterna Magna, Arch. Neurol. & Psychiat. 4: 529 (Nov.) 1920.

mal" are cases which later were diagnosed syringomyelia, multiple sclerosis, etc. A normal difference in protein content between ventricular and lumbar fluids has been known to exist. We found very constantly a normal difference between cisterna magna and cisterna terminalis fluids to be from 4 to 8 mg. per hundred c.c. In the second subdivision of this group the extreme differences are found. These patients frequently had had a previous rachicentesis with a marked increase of total protein present. The combined punctures were made to determine the relative difference hydrodynamically and chemically. Several patients with cord compression operated on during the past year did not have the combined puncture for the reason that the lumbar fluid alone—showing in some cases the complete syndrome of Froin, with a total protein of from 2,100 to 2,400 mg. per hundred c.c.—made, in view of the clinical findings, an evident diagnosis.

In the cases without hydrodynamic evidence of block, protein, quantitation plays a most important part. The clinical evidence, coupled with the marked differences in protein from the two loci, completed the picture on which operation was advised.

COMMENT

What is the value of careful quantitive protein estimation? We believe that in many neurologic diseases the appearance of abnormal amounts of protein in the spinal fluid is one of the earliest detectable signs of pathology or altered physiology, and that it constitutes a nondifferential reaction of fundamental importance. If this is so it becomes necessary to know the normal amounts, and if possible, the amounts to be expected in different pathologic states. It is therefore obvious that an estimation of protein by an accurate quantitative method becomes essential.

For some years the French, pioneers in cerebrospinal fluid pathology, have expressed their protein determinations in figures, using for the most part the Mestrezat trichloracetic acid method, and more recently that advocated by Ravaut and Boyer,[3] in which silver chlorid is used as standard. While we have not used these methods, if is felt that our method, elaborated by Dr. Denis, should be even more accurate than these, in that the standard employed is a protein, and that an unknown protein precipitate is compared with a known protein precipitate prepared at the same time.

While all who examine spinal fluid form a rough conception of the amount of protein to be expected in normal fluids, and some authors give figures, it is well known that the normal variation is considerable. To one only slightly familiar with such examinations the estimation of normal and pathologic amounts of protein is bewildering. It was with the hope of establishing normal and pathologic groups that this method has been followed by us for the last year and a half. Can we establish normal, and separate pathologic states according to protein content? To a certain extent we believe that we can, as is apparent in the accompanying table, of which a few of the most significant figures will be discussed.

Normal.—We find to lie between 38 and 16 mg. per hundred c.c. Perhaps a larger number of cases would make the limits a little greater, but it appears safe to say that more than 40 mg. is always suspicious of an underlying pathologic process. True, many figures below this occur in the different pathologic groups, but for the most part these low readings are found in convalescence or in inactive stages of chronic diseases.

Pathologic.—In considering pathologic states, we must admit at least two sources of spinal fluid protein: that which accompanies exudative processes, and that which comes from the blood by transudation or increased permeability of the membranes. The purest example of the former is an acute pyogenic meningitis, and of the latter the fluid below a cord tumor. In the milder inflammations, such as syphilitic meningitis, an amount of protein will be expected less than in the acute meningitides, and this is usually the case; but within the syphilitic group itself there are subgroups which show slight cell reaction and relatively great protein content. It is reasonable to suppose that this considerable protein output is not all the product of menigeal irritation, but is also a product of transudation, and perhaps a manifestation of deep-seated parenchymatous disease. Thus, we find the higher readings in the syphilitic group are either associated with acute meningitic types(exudative in origin) or with the more profound degenerative types, such as paresis (transudative in origin). We have, then, within the syphilitic group a valuable guide as to diagnosis and consequently prognosis in a careful correlation of cell count and protein determination. Similarly, the persistence of excess of protein in the spinal fluid in syphilitics during treatment is of prognostic significance.

Of especial note are several groups of cases in which the spinal fluid is generally said to be "negative," but which are shown to be abnormal on careful protein determination. Of the group of cases presenting vascular hypertension, thirty out of thirty-nine presented hyperalbuminosis. Some of these patients had evidence of cerebral vascular accidents, and some did not. It is not too much to say that in these cases there is usually to be found protein excess which, because of lack of cells, is of transudative origin. This is a point but seldom emphasized, and one of considerable diagnostic significance. Presumably in a similar manner a limited number of cases of purely degenerative character, such as multiple sclerosis and paralysis agitans, have presented increased protein. The fluids from brain tumors and abscesses also are not necessarily "negative," but may present considerable protein excess. French writers have for several years paid considerable attention to this isolated protein reaction, but in America its significance appears to have been generally overlooked. With the quantitative method, a moderate but distinct protein increase is brought to the attention and cannot be discarded as of no signficance.

As is well known, the acute forms of meningitis yield a very great amount of protein, but it was not realized by us until the present method was employed that a typical acute meningitis might be associated with a comparatively slight protein output, even in the advanced stages of the disease. The amount of protein obtained in tuberculous meningitis agrees with preconceived ideas that the protein is moderately increased, but less than in the pyogenic forms. Comment on the serous meningitic types must be withheld until more cases have been investigated.

3. Ravaut, P., and Boyer, L.: Nouveau procédé de dosage rapide de l'albumine dans le liquid cephalo-rachidien, Presse méd. **28**: 42 (Jan. 17) 1920.

Since first called to attention by Froin [4] in 1903, the syndrome which bears his name (the chief characteristic of which is excessive protein) has been considered almost pathognomonic of spinal cord compression. But it is only recently that the importance of lesser amounts of protein in the spinal fluid below cord tumors has been emphasized. For more than a year, cases suspected of having cord tumor have been systematically studied by combined cistern and lumbar puncture in this clinic, an opportunity being thereby given to compare the spinal fluid above and below the obstruction. It has been found normally that the cistern fluid shows slightly less protein than that obtained from the lumbar sac. In almost every case in which tumor has been demonstrated there has been a distinct difference in the protein content of the two fluids. Further, when it was possible by means of manometric readings to demonstrate a block in the spinal meninges, the protein content from a lumbar puncture was usually found increased to a marked degree, in some cases presenting the complete syndrome of Froin. It is our belief that even slight increase in protein in suspected cord tumor is an almost constant finding and a sign of great value. Another paper will deal with this subject.

A point of interest, but one not brought out in the table, is the effect of repeated lumbar puncture on subsequent protein determination. In a number of cases it was clearly demonstrated that in cases in which spinal fluid was withdrawn at an interval of a few days, the second fluid regularly presented lower readings. If the interval was increased to a week or more, this was not the case. This fact suggests a hypothetic hydrorrhea and an interesting correlation with so-called lumbar puncture headache.

CONCLUSIONS

While we do not pretend that quantitative protein determination is a necessity in the hands of a competent and experienced observer, there is no question but that accurate estimation gives results in more certain and intelligent form, that slighter degrees of abnormality tend to assume unsuspected significance, and that in consequence diagnosis is rendered more acute.

ABSTRACT OF DISCUSSION

DR. DAVID J. KALISKI, New York: What figures were obtained in xanthochromic fluids, and what was the difference in the cistern fluid and the spinal fluid? Were any studies made in cases of tumor of the cord, in tuberculosis, or other meningitides, or in cases of encephalitis? If there is often an increase in noninflammatory diseases, like hypertension cases with no nervous changes, how can the globulin content be used in differential diagnosis or prognosis in syphilis?

DR. JAMES B. AYER, Boston: This method is nothing new. For several years the French have expressed these protein determinations in figures. This method is more accurate than the determination of the quantitative protein for the purpose of showing that the increase in the protein is one of the early manifestations that occur in the nervous system. It is an attempt to express in figures a reaction which we believe is important. This test seems to get most of the proteins, and we believe it is of use in conjunction with other tests.

DR. JOSEPH B. NEAL, New York: In connection with the work in the meningitis division of the Research Laboratory of the New York Department of Health, we have examined many spinal fluids—about 8,000, especially in acute conditions. We realize the importance of the quantitative estimation of the protein content. We are forced, however, to rely on the qualitative methods, which are not wholly satisfactory, because we have not a sufficient force to do the quantitative work. The method we use is the nitric acid ring test for albumin and the Noguchi test for globulin. During the epidemic of poliomyelitis in 1916, when we were able to have a physiologic chemist capable of carrying on the quantitative work, we found that our qualitative readings of normal fluids corresponded very well with the normal quantitative results, and that our readings in pathologic conditions corresponded very well also. I think, however, that unless much of this work is passing through the hands of the same group of people, there is a tendency to read albumin and globulin as normal when they are increased. I should like to ask whether any effort has been made to determine whether there is a difference in the protein present when increase is due to transudate and when it is an exudate. According to Anglada, the protein present in normal spinal fluid is serum globulin, and that in pathologic fluid is serum albumin. As to the syndrome of Froin, I have seen two very typical cases occurring in poliencephalitis.

DR. HAROLD E. FOSTER, Boston: We have examined and compared the xanthochromic fluid in cord compression with the cistern fluid and found the cistern fluid protein content to be within normal limits while the lumbar quantitative test gave 1,800, 2,100 and up to 2,400 mg. per hundred cubic centimeters. In fact, we have examined xanthochromic fluid from below a cord tumor, an apparently Froin syndrome, fluid from immediately above the tumor, and a cistern fluid from the same patient. The fluid from the middle locus gave a lower quantitative result than that from the lower lumbar region, while the cistern fluid was within normal limits. The word "marked" is a relative term, and naming it with the hypertension group I meant that in many long continued cases of cardiorenal vascular disease the content was double or even more than double a normal average. In interpreting transudative and exudative fluids, one must always keep the whole picture in mind as well as the total protein content, the pleocytosis being found in the latter. In the nonsyphilitic groups we have seen fluids without a globulin ring which gave an increase of two or three times double the normal average protein content.

4. Froin: Gaz. d. hôp. **76**: 1005, 1903.

MESENTERIC VASCULAR OCCLUSION

WITH REPORT OF NINE CASES IN WHICH OPERATION WAS PERFORMED *

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The first instance of occlusion of the mesenteric vessels appears to have been reported by Tiedeman, in 1843, while four years later Virchow described its pathology. During the following half century a scanty literature, chiefly continental, was contributed. In 1904, Jackson, Porter and Quinby [1] made what remains perhaps the most important American contribution, in which they collected and reviewed 184 cases from the literature and added thirty new cases from various sources. Totter [2] in 1913, published a monograph which is the most comprehensive study of the subject in English. This is based on six original cases, in one of which the patient recovered without operation, thus throwing considerable doubt on the accuracy of the diagnosis, and on 360 cases collected from the literature. These, with other small groups of cases, make it safe to assume that about 500 cases are now on record.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Jackson, J. M.; Porter, C. A., and Quinby, W. C.: Mesenteric Embolism and Thrombosis, J. A. M. A. **43**: 25 (July 2); 110 (July 9); 183 (July 16) 1914.

2. Trotter, L. B. C.: Embolism and Thrombosis of the Mesenteric Vessels, Cambridge, Cambridge University Press, 1913.

The purposes of this paper forbid a further review of what has gone before other than to state that it gives one the impression that mesenteric vascular occlusion is a very rare condition, a medical curiosity, and that it has an exceedingly high mortality. With the latter view, I am in full accord. The death rate is bound to be practically 100 per cent. unless prompt and proper treatment is instituted and probably must remain distressingly high in any event. But as to its rarity, I take issue. It is my conviction that these cases frequently pass unrecognized, and that deaths from this condition are often ascribed to postoperative ileus, peritonitis and the like. Neither do I find in the literature emphasis on what appear to me to be some of its most characteristic features, both pathologic and clinical. On the contrary, I hold that certain symptoms, usually mentioned, are no part of this disease per se, but are those of a secondary peritonitis.

It is my purpose to report nine original cases of mesenteric vascular occlusion, with my own analysis and deductions, in the hope that I may aid in the construction of a composite picture of this condition which may make preoperative diagnosis possible or at least give us the melancholy satisfaction of recognition at operation.

Three years ago, I recognized my first case of mesenteric vascular occlusion—at operation. Since then I have encountered eight others in which this lesion was the deciding factor, and I am sure I have met with many simliar cases in the past without identifying them. All of these cases have presented a pathologic picture so characteristic as to be unmistakable, and, in addition, a syndrome so uniform as to suggest a definite disease entity, on the recognition of which alone, rational treatment must be based. I must admit at once that I have as yet hesitated to make a positive diagnosis of this condition before operation; but in the latter cases of this series, I have listed mesenteric vascular occlusion among the two or three possibilities.

REPORT OF CASES

CASE 1.—A man, aged 29, admitted to Arnot-Ogden Hospital, Jan. 28, 1918, in a dying condition, had been suddenly seized on the street with agonizing abdominal pain and vomiting, seventy-two hours before. Vomiting, persistent at first, had diminished in frequency after the first eight hours. The bowels had moved several times without relieving the pain. The temperature was subnormal, the pulse infrequent but irregular and small. The skin was cold. The abdomen was very tender and full but not distended; there was no marked muscle spasm. Borborygmus was heard throughout the abdomen. Operation was decided on without definite diagnosis. Through a right rectus incision, a large quantity of clear, odorless and slightly blood tinged serum was evacuated. The appendix, slightly congested, was removed, but its appearance failed to explain the symptoms. Further exploration disclosed several coils of dark red, edematous, dilated small intestine. They did not tend to crowd out of the incision and seemed to be held down by a considerable weight of fluid within their lumen, which poured from one coil to the next as they were manipulated. About 4 feet of the intestine was thus involved. Some small oval areas were very dark, but no gangrene was seen. In addition, a heavy, doughy mass, the size of my wrist, was found dragging down over the pelvic brim, apparently adherent at either end; but as my fingers were insinuated about and under it, the lower end was brought up from the depths of the pelvis. It proved to be the mesentery with its attached intestine, which was more cyanotic than that first seen.

While uncertain as to the cause, resection of the intestine was indicated, but the patient's condition forbade. Enterostomy was performed and hugh quantities of fluid drained, but the patient survived only twelve hours. Necropsy was not allowed.

CASE 2.—A retired business man, aged 56, was admitted to Arnot-Ogden Hospital, May 12, 1918, with a diagnosis of acute appendicitis. He had serious cardiovascular-renal disease, with casts, albumin and a systolic pressure of 260. He had been ill for three days with vague, moderately severe abdominal pain and occasional vomiting. The pain had now localized in the right lower quadrant. There was no distention of the abdomen and only doubtful rigidity of the right rectus. His bowels had moved daily, and the pain tended to be paroxysmal and colicky in character. While it was considered an atypical case, a diagnosis of appendicitis had been made some years before, and operation seemed indicated. A considerable amount of amber fluid came from the incision and the intestine, as far as examined, was dusky, heavy and dilated, *not distended*, and contained a large amount of fluid and very little gas. The appendix was sclerosed and strictured at the tip, while its middle and proximal portions were definitely inflamed. It seemed a reasonable explanation of his symptoms, but the significance of the plum colored, soggy intestine was not appreciated at the time.

After operation, the colicky pain continued much as before, with occasional vomiting. His bowels moved reasonably well, but his abdomen gradually became more full, was dull on percussion, but lacked muscle spasm. On the fourth day after operation and the seventh of his illness, it became evident that he was not doing well, that something was radically wrong, and a second operation was decided on. A midline incision brought forth a quantity of amber fluid, slightly blood tinged. The appendicular region showed no abscess or adhesions, but we soon came on several coils of dark, lifeless intestine containing but little gas and much fluid. They lay inert in the cavity, held down by their fluid contents, which slushed about as they were handled. The peritoneum was glistening, but the intestinal walls were thick and edematous. About 4 feet was thus affected. The similarity of this condition to the one first described was noted at once, but when the exploring finger encountered a tense, heavy, thick mass hanging down into the pelvis, the identity of the two was striking. Thrombosed vessels and subperitoneal hemorrhages were found in the mesentery in this case, and the true diagnosis was established.

Intestinal resection was out of the question here and the case was managed in the same manner and with the same result as was the first reported.

CASE 3.—A school teacher, aged 35, seen, July 5, 1918, at the Arnot-Ogden Hospital, had been operated on for suppurative appendicitis, June 23, preceding, and up to July 4 had done well. Drainage had ceased, and the wound looked healthy. July 4, she had complained of flatulency and general abdominal unrest. Her appetite failed, and she appeared to be seriously ill. Fairly satisfactory bowel movements gave her no relief. The abdomen was full but not distended, and was dull on percussion, except over the stomach. There was no elevation of pulse rate or temperature. Further enemas and pituitary extract were used; but although there were fair results from the bowels, the patient felt no relief.

July 6, I opened the abdomen in the median line, after exploring the original appendectomy wound with negative results. Considerable free, amber fluid poured out of the incision, and about 5 feet of cyanosed, dilated intestine was found, part of which was on the verge of gangrene. The mesentery was found as in the preceding cases. Intestinal resection, with side-to-side anastomosis, was performed. The patient did well for about a week when a fecal fistula developed, probably from an extension of the thrombosis. This leak was evidently so high in the intestinal tract that it seriously impaired her nutrition, and she died about two weeks after the second operation.

CASE 4.—A woman, aged 47, seen Aug. 21, 1918, had been seized with violent abdominal pain and vomiting about an hour after her evening meal. Repeated doses of morphin had given her but little relief. She was in shock when I saw her at the ninth hour. The abdomen was flaccid, dull on percussion, with generalized pain and tenderness. The temperature was subnormal. I advised immediate operation

on the diagnosis of mesenteric vascular occlusion, ruptured viscus or acute pancreatitis, in the order named. Permission was not granted at this time, but she was removed to the Arnot-Ogden Hospital. The bowels responded to enemas several times, and the vomiting became less frequent. Pain was not relieved, however, and she continued to be in a state of shock. At the twenty-first hour, operation was undertaken. Eight feet of small intestine was found involved as before described, the same free fluid and the thick, heavy mesentery dragging down over the sacral promontory. Resection was performed, and the patient survived twelve hours.

CASE 5.—A retired farmer, aged 63, with marked vascular degeneration, was admitted to Arnot-Ogden Hospital, June 27, 1919, eighteen hours after a sudden, violent onset of general abdominal pain and vomiting. The bowels had not moved, although enemas had been used. He had singultus, general boardlike rigidity, and was in shock. Percussion was dull. Operation revealed a large amount of free, bloody, odorless, sticky fluid and about 10 inches of dark, dilated intestine, at the upper limit of which was a tight constricting band, above which the intestine was normal. The mesentery of the involved intestine hung like a tense rope over the pelvic brim, and its vessels were thrombosed. Division of the band and resection were performed.

The patient did well for nine days, the bowels moving well. Then complete anorexia developed, he became depressed, vomiting now and then, and he died on the tenth day, either from an extension of the thrombosis, or as I believe, from the intense heat then prevailing.

CASE 6.—A woman, aged 46, stout, plethoric, with high blood pressure, but in general good health, had experienced sudden, violent onset of abdominal pain but without vomiting and was admitted to the Arnot-Ogden Hospital, Sept. 23, 1919, seven hours after seizure. The bowels did not respond to enemas. There was exquisite tenderness throughout the abdomen, but there was neither distention or rigidity. During the examination, a large uterine fibroid was found. Torsion of this tumor or mesenteric occlusion was considered. Operation revealed a quantity of free fluid, 18 inches of dark, plum colored intestine and the characteristic condition of the mesentery. Resection and anastomosis were performed and her recovery was rapid and complete. I have since removed the fibroid and could not positively locate the site of resection.

CASE 7.—A woman, aged 64, with pipe-stem arteries and a long-standing, symptomless femoral hernia, was seen Jan. 24, 1920. Three days before she had experienced sharp, paroxysmal pain in the hernia for a few hours. After this she vomited at intervals, had vague abdominal unrest and occasional disseminated abdominal colic. She entered the hospital with a diagnosis of appendicitis, but I advised exploration of the hernia. A small knuckle of bowel, not involving its entire lumen, was found strangulated and gangrenous in the femoral canal. There was a gush of bloody fluid from the abdomen and above the strangulation, the intestine was dark, soggy and dilated, with a greatly thickened, heavy mesentery. On account of her age, only the gangrenous portion was brought out of the incision, and enterostomy was performed the next day, with an unqualifiedly bad prognosis. The enterostomy drained well, and she reacted satisfactorily; but she began to fail after the fourth day and died on the seventh from exhaustion and sepsis.

CASE 8.—A man, aged 35, admitted to Arnot-Ogden Hospital, Sept. 7, 1920, had previously been in good health except for an attack of appendicitis twelve years before, for which operation was not performed. He was taken with violent general abdominal pain and vomiting while at work. Five hours later he was seen by the family physician, who advised immediate operation on a diagnosis of appendicitis. Two hours later, the pain becoming intolerable, this advice was accepted, and he was admitted to the hospital. Vomiting had now ceased, his pain was still severe despite large doses of morphin and he was in shock. The abdomen was flat, dull on percussion, and there was no muscle spasm.

A midline incision brought a free flow of amber fluid and the small intestine, from just below its emergence through the mesocolon to within 15 inches of the ileocecal valve, was found dilated, dark and lifeless and contained a large amount of fluid which poured from coil to coil as it was handled. The entire mesentery was doughy and thrombosed, strangled by a single loop of intestine which had become twisted about its root. On releasing this coil, a faint pulsation could be discerned at some points along the intestine, and we had a half-hearted hope that the circulation might reestablish itself. Enterostomy was performed and the patient survived four days, during which time the bowels moved fairly well. Singultus, tympany and distention developed on the third day, and he died in a convulsive attack on the fourth.

CASE 9.—A man, aged 20, seen Oct. 15, 1920, three years before had gone twelve days without a bowel movement, but had suffered no acute symptoms. About a week before he noticed abdominal soreness when riding in an automobile. The next night he had a few hours of abdominal pain and vomited. He remained home from this time, with poor appetite and increasing difficulty in causing the bowels to move. For four days, they had not acted at all. He had very little pain, no distention, and he vomited only after taking nourishment. He lay in bed in an attitude of rest and with no expression of suffering. There was no disturbance of pulse or temperature and no muscle spasm. Loud intestinal gurgling could be heard as one sat near his bedside. All efforts to cause the bowels to move had been unsuccessful. From his history and present condition, I suspected fecal impaction and advised further enemas, insisting on the necessity of fluoroscopy should he recover by these measures.

About twenty-four hours later, he was suddenly seized with agonizing abdominal pain, vomiting which soon became stercoraceous, and shock. He was sent to the hospital, and immediate operation was undertaken. Dulness had replaced the modified tympany of the previous day, but there was no muscle spasm. We found a large amount of free, amber fluid and about 6 feet of cyanosed, lifeless, dilated intestine. The mesentery was as before described, but on tracing it down into the pelvis, we came on a large elastic mass which proved to be a cyst of the mesentery which had become twisted three complete turns, thus strangling the circulation. The torsion was relieved, and enterostomy performed, but he died twelve hours later.

My interpretation of the events in this case is that three years ago when he had the twelve day period of obstipation, the cyst rotated sufficiently to obstruct the bowel, finally righting itself. It then remained symptomless until one week before I saw him, when the first turn occurred. The night he had his first pain and vomiting, a second rotation occurred. And the third and final twist, which caused the thrombosis, occurred the day before operation.

COMMENT

A study of these cases shows a pathologic picture which is strikingly uniform and characteristic, unlike that found in any other disease, and which, so far as my reading goes, has not been hitherto described in a way to enable the surgeon positively to recognize his first case. The salient features in order of their importance are: (1) the transparent, sticky peritoneal fluid, amber or blood tinged in color, odorless and without coagulated lymph, which was present in copious amount in every instance; (2) the cyanosed, plum colored, soggy, edematous intestine, with glistening peritoneum, free from adhesions, its lumen relaxed —not distended—to large caliber, lying inert within the abdominal cavity, with no tendency to crowd out of the incision, held down by a weight of fluid within its lumen, but containing little gas. The intestine may be mottled and may be on the verge of gangrene in small areas, but no gross gangrene was seen in any of these cases. Except for the absence of gas distention, it resembles the congested bowel often seen in large strangulated hernias, and one might readily enough expect it to come to life as the latter frequently does.

(3) Most characteristic is the mesentery. In all of these cases it formed a thick, doughy mass, dragging down over the pelvic brim as though adherent. But this is not the case. Sufficient force will bring it up with its attached bowel. There are no adhesions. Only the force of gravity and of negative pressure must be overcome, yet it comes up from the depths of the pelvis with much the sensation experienced by the swimmer in a heavy bathing suit when he lifts himself from the water. Once delivered, thrombosed vessels may often be seen or felt, and subperitoneal hemorrhages are occasionally observed. It is a mechanical and not an inflammatory condition. Peritonitis and gangrene, if found, are secondary and rather late changes. They were not seen in this series, though some of the patients were operated on several days after the onset.

Pathologically these cases fall into two general forms: (1) In primary occlusion, the lesions found and the symptoms produced are due to the mesenteric obstruction alone. (2) In the secondary form, occlusion of the mesenteric vessels occurs as a complication of such preexistent lesions as mesenteric cysts, strangulated hernias, suppurative processes within the abdominal cavity and the usual causes of intestinal obstruction.

Symptomatically, two types of manifestations are likewise clearly marked: (1) the fulminating and (2) the phlegmatic. These correspond to the acute and chronic forms mentioned by some writers, but they appear to me to be more descriptive terms. Either the primary or secondary forms may appear with fulminating or phlegmatic symptoms. The fulminating type comes on with sudden, violent symptoms which are sufficiently characteristic in my opinion to make, with greater familiarity, preoperative diagnosis possible. The phlegmatic type is so insidious in its development, and in its secondary form so interwoven with the signs of the preceding disease, as to make diagnosis before operation difficult or impossible. But the pathologic condition produced is identical in the two types.

Based on this smalll series of cases, two prevailing ideas concerning this disease must be unlearned: (1) Extensive gangrene of the bowel is not seen unless it is a very late case, much later than these cases would ordinarily come to operation. (2) Complete intestinal obstruction is seen only in those cases in which some of its usual causes are present as the primary disease.

The striking symptoms are these: 1. There is disturbed function of the bowels. This may rarely express itself as a diarrhea, but, as a rule, there is difficulty in getting the bowels to move and the passage of flatus and feces fails to give the patient the relief ordinarily expected. Complete obstruction, as rare as diarrhea, is usually due to some coexisting cause. The presence of blood in the stools is mentioned by most writers but was observed only twice in this series.

2. Vomiting usually occurs early—coincident with the pain in the fulminating cases—and may be almost continuous during the first hours. It may become stercoraceous, and blood is occasionally seen. The notable feature of the vomiting in this series is that it tends to diminish or cease after the first six or eight hours. I explain this by the fact that after the stomach and intestine above the lesion are emptied, there remains only the natural secretions to irritate as they accumulate. Peristalsis is reversed only above the lesion. In the involved area there is no activity in either direction.

3. Pain, sudden, violent and agonizing, marks the onset of the fulminating cases. It resembles that seen in acute pancreatitis or rupture of a viscus. It tends to be paroxysmal or colicky, and is more or less general. In several of these cases it seemed to be worse over the left lower half of the abdomen, possibly being referred to the root of the mesentery. In the phlegmatic cases, it is rather vague and fugitive and is not localized. It is not influenced by bowel movements.

4. Shock is marked in the fulminating cases and its degree is to an extent an index of the amount of bowel involved.

Of almost equal value in diagnosis are the absence of certain symptoms, often mentioned in descriptions of this disease and ordinarily seen in the "acute abdomen," namely (1) It is essentially an afebrile disease, the temperature rarely rising above 100 F., and often being subnormal. The pulse is infrequent but may be small, irregular and thready, according to the degree of shock. (2) There is little or no muscle spasm. The flaccidity of the abdominal muscles is a very striking feature in a patient almost crazed with abdominal pain. (3) The abdomen is not distended. Neither is it scaphoid. It may best be described as rotund but not under tension. (4) The percussion note is dull or flat—not tympanitic. This is as one would expect, having in mind the conditions within, free fluid and a relaxed bowel partly filled with fluid. Such symptoms as rigidity, tympany and singultus are those of peritonitis and are seen, if at all, only late in the course.

To summarize, the fulminating cases of this group showed this characteristic syndrome: sudden, violent abdominal pain, not markedly localized; persistent vomiting, usually diminishing after the first few hours; slight or moderate fulness of the abdomen without muscle spasm, and a dull percussion note. The phlegmatic cases are much less clear in their evolution. There is vague abdominal unrest with occasional vomiting, unrelieved by fairly satisfactory bowel movements, and without localized tenderness. This is as definite as I can draw the picture. This type, if secondary, is so insidious that it is difficult to say when the primary disease becomes complicated.

But if we are unable to comply with the demands of ideal surgery to the extent of preoperative diagnosis, the pathology is so characteristic that no error should be made when, in conformity with the demands of "practical" surgery, we recognize an "acute" or "surgical" abdomen and open for exploratory purposes. Too often, I fear, has such an abdomen been drained or closed with a diagnosis of peritonitis of unknown origin, self-reduced volvulus, or intussusception, or similar diagnosis, unhappily with a favorable prognosis, the patient deprived of his only chance for recovery, and the surgeon placed in an embarrassing position, when had the real condition been recognized, enterostomy or enterectomy and an unfavorable prognosis were indicated.

The prognosis and treatment can be briefly stated. My mortality has been 88 per cent.—one recovery in nine cases—and I find but few writers who estimate the mortality below from 70 to 75 per cent. A very limited involvement, in a patient seen early and treated rationally, may yield a lower mortality, but with the ever present danger of extension, the prognosis must remain exceedingly grave.

Rational treatment is based on the fact that the bowel deprived of its blood supply can not recover.

Elimination of the involved portion, be it large or small, by the quickest possible means is the only treatment, and the fate of the patient then rests on the further extension of the process and the possibility of slow starvation if the drainage is high in the intestinal tract.

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ABSTRACT OF DISCUSSION

DR. GEORGE M. SHEAHAN, Quincy, Mass.: All of us have suffered bad results from accidents of this nature. I use the word accident advisedly as progress in prevention and treatment has been so slow—in spite of the importance of the subject—that these cases are rarely forecasted and, as a rule, are unsuccessfully treated. The startling suddenness of development and the fatal outcome make postoperative embolism, mesenteric or otherwise, a sort of surgical sword of Damocles. Early diagnosis appears to be the important point, and it seems to me that Dr. Loop has drawn a better and more helpful picture of the condition than any other we have had up to the present time. As to frequency, Dr. Loop stated that the condition is less of a rarity than supposed. This, of course, is a relative matter—it certainly is true that vascular pluggings and infarcts are common pathologic findings; nevertheless, it must be admitted that mesenteric vascular occlusion is rather rare. At the Massachusetts General Hospital, where they have about 4,000 surgical cases yearly, there were only thirteen cases of this condition in twelve years. Nor do I agree entirely that any considerable number of cases are overlooked. The pathologic records do not substantiate this view. It is the severity of the condition, not its frequency, which makes it so important. As to diagnosis, it would seem well to confine our attention in large part to the phlegmatic type, as for obvious reasons nice distinctions in the fulminating type are difficult. What hope we have of a better prognosis seems to be in better treatment of this type; and, in the diagnosis, I am thoroughly convinced that an accurate history is the important factor. These cardinal points should prove most helpful: (1) suddenly disturbed function of the bowels; (2) vomiting, and (3) pain, violent and agonizing, not influenced by bowel movements. The similarity of this description to Clubbe's description of early intussusception is striking. There are other points of similarity between the two conditions. The presence of circulatory disease, advanced or middle age, cirrhosis of the liver, or sepsis, may help in the diagnosis, but they are by no means constant and are practically of no negative value. Among the more recent cases at the Massachusetts General Hospital are three in which the patients are in the neighborhood of 30 years of age, two of them having absolutely normal circulatory apparatus. Of course, the explanation is that this condition may be due to various causes, among them being sepsis, trauma, slowed circulation and disease of the circulatory organs. The evidence seems to be fairly strong —not absolute—that the majority of these occlusions are in the superior mesenteric artery. If this is the case, it is simply another strong argument against rough handling of the intestine. Only two of Dr. Loop's patients showed bloody intestinal discharges. This is not what one would expect from the pathologic findings, nor do I think it agrees with the majority of the clinical findings, for, if I remember correctly, Dr. Bottomley has several times called attention to the importance of this symptom. A possible explanation is that in some cases it is terminal in nature. Treatment must depend on surgical judgment in the individual case.

DR. W. D. JOHNSON, Batavia, N. Y.: Among the features that are outstanding is the absolute accuracy of description of cases by Dr. Loop. In actual practice we need to recognize the nature of our cases before we operate, and we need to recognize them at the time we are operating. I do not think the condition is quite as rare as Dr. Sheahan believes. I have seen six cases in five years. The last case was confirmed by a postmortem. We had removed an exophthalmic goiter, and in the subsequent period of low blood pressure mesenteric vascular occlusion occurred. The essential thing to recognize early in these cases is that it is a case of "acute abdomen" and that an immediate operation is needed. In the only case in which I had a chance to operate, the remainder of the bowel turned black during the resection, and all I could do was to close the abdomen.

DR. J. L. BLISS, Holyoke, Mass.: I have seen one case of occlusion of the mesenteric artery. The man was a wool sorter. He was suddenly seized with crampy pain in the abdomen and vomited. His abdomen was soft; the temperature, 96.5 F.; pulse, 60. The temperature rose to 98.6, and pulse, 104, on the following day. Some abdominal distress was present, but no vomiting and no movement. An enema turned some fecal matter. After the enema he vomited a glass of malted milk. During the evening his stomach was washed and a high ox gall enema given. The enema was returned with small particles of fecal matter. Stomach washing returned fecal material and some castor oil given the night before. There had been no bowel movement, and there was very little abdominal pain. He termed it a disagreeable feeling. The abdomen was distended to a moderate degree but soft. He appeared anxious and somewhat restless. Operation was performed that afternoon. The intestines, though somewhat distended, did not enter the opening as usual, but lay an inert soggy mass, a mahogany red with darker gangrenous spots. The intestine contained considerable fluid. Death occurred a few hours later. With the exception of the upper portion of the duodenum, the entire small intestine was dark, almost black, and gangrenous. The cecum was somewhat reddened; the mesentery was dark and edematous. The large intestine was pale and empty.

DR. ROSS G. LOOP, Elmira, N. Y.: The main point I wish to make is that this is a mechanical, as contrasted with an infective, process. My mortality has been eight cases out of nine, although but one patient in the series could have been reasonably expected to recover. Two of them survived for about two weeks; one died on the tenth day, I believe, of heat prostration, for his bowels were moving well and he had no vomiting. The treatment consists of elimination of the involved intestine by the quickest possible method, usually by enterostomy. Resection requires too much time, as a rule.

THE MEDICAL SIGNIFICANCE OF THE DISORDERS OF SPEECH*

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The speech area has not been demonstrated in the brain at birth, and the development of speech is not inevitable. An intact auditory apparatus, the presence of intelligence, and an intact nervous and muscle system are required for its proper development, plus certain emotional and social demands and situations under the stimulus of which it is organized.

Speech disorders, then, are early and invaluable symptoms of anomalies of intellectual and emotional growth as well as organic difficulties of the nervous system.

I shall not touch on the organic aphasias, but shall confine the discussion to the four tentative groups: (1) delayed speech; (2) letter substitution; (3) oral inactivities of the articulatory organs, and (4) stuttering, which includes the disorder of stammering. These disorders should be regarded as symptom complexes rather than as disease entities. These types are rarely simple and clear cut.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

DELAYED SPEECH

Delayed speech has both its organic and its functional form. The organic form is due to poor intelligence or defective hearing. The functional form is due, in some cases, to faulty family attitude.

A second type of functional form may be classified as an infantile neurosis, and is a fundamental lack of adaptation to the necessities of life, and speech is simply one, and the most pronounced, symptom of the beginning disorder.

LETTER SUBSTITUTION

This is commonly called lisping and lalling, and is the substitution of one letter sound for another, such as *th* and *sh* for *s* and *z*, and *w* for *r*. This disorder is most often supposed to be caused by faulty occlusion of the teeth and malformed palatal arch. We have been convinced that this is only a slight causative factor, through several group studies, one with the feebleminded, where the relationship between general intelligence and letter position was much greater than the relationship between arch and occlusion and good speech. The second group study was made on 1,100 incoming freshmen *men* at the University of Wisconsin. Ten of these men had good arch and occlusion, and letter substitution; fifty had poor arch and occlusion, and letter substitution, but 265 had poor arch and occlusion, and good speech.

There is a second type, which is apparently a simple hangover of early childish habits.

There is a third type, in which the intelligence is good, but in which the personality as a whole is infantile and is somewhat shut in.

ORAL INACTIVITY

The third type of disorder, which we have called oral inactivity, has been relatively unclassified and unstudied. It is known under the names of ideoglossia and "baby talk," "nigger boy talk," etc. It has been much neglected, and relegated to the field of the elocutionist. It is the common history, in the majority of these cases, that the parents of children so affected have been told that the child will outgrow this disorder. That this is not so is demonstrated by twenty-nine of these cases, of either medium or severe degree, noted in 1,400 university freshmen, whom we examined. This type of disorder, of course, occurs as a prominent symptom in such organic conditions as general paresis, and in brain lesions caused by hemorrhage; it is seen in the very toxic states in acute infections, in fatigue states; it it found in the stuporous and drowsy state of lethargic encephalitis. A second type of this disorder is due to faulty hearing during the time when speech sounds are being learned.

The third type is found in chronic states of fright, and in general timidity states.

The fourth form, on which we hope to report in detail later, we feel to be of great interest to the profession in general and to neuropsychiatrists and endocrinologists in particular. This severe oral inactivity and faulty construction, especially of the final consonant sounds, we have classed as an endocrine-vitamin disorder group. The factors that stand out most clearly are: (1) a marked similarity of the speech symptom; (2) uniform vitamin deficiencies of water soluble B; (3) a history in a large precentage of the cases of dysthyroid condition in the mother, and (4) history of marked food disorders in infancy.

STUTTERING

Stuttering, under which we include stammering, may be described as a break in the rhythm of speech, due to a blocking or inhibiting of the muscular coordinations. It may not be considered as a disease entity, but rather as a symptom of any of a number of underlying conditions.

A tentative grouping of stuttering according to apparent causes can be made under the four following heads:

1. Type 1 is the organic type, occasionally seen in paresis and other brain lesions. We have observed recently a case of general paresis, in which there was a stutter, in no way different from the functional stutter. Bastian [1] mentions a patient who on beginning to talk, "began after the fashion of the stutterer." He diagnosed this case as complete aphemia due to a small lesion in the course of the internuclear fibers of the left hemisphere. He also mentions its resemblance to the true functional disorders. We have seen a case recently, with a slight hemiplegia of the right side, due to hemorrhage, in which there is as a result a marked stutter. There is also in this case a perseveration of the muscle movement in writing as well as in speech.

2. Type 2, which we have called paratonia, and which is probably akin to the endocrine-vitamin group of the oral inactivities, is certainly closely related to epilepsy and to tetany and catatonic states.

3. Type 3 is the psychoneurotic, under which we have (*a*) the hysterical, in the sense the word is used by Babinski,[2] as meaning "caused by suggestion and cured by suggestion." The symptom in this case is caught in the school or, in the case of the war neuroses, in the hospital where the men were confined with others already so affected, or who had heard that this was a common consequence of war experience. This symptom in many cases would tend to become prolonged by an hysterical mechanism after the immediate situation was relieved. (*b*) The anxiety type, usually accompanied by "tics" closely resembling the somatic insufficiency tics, with which individuals, inadequate for some reason or other, meet situations that are too difficult for them to meet adequately.

4. Type 4 is the hypomanic type. The marked swings of mood in the true hypomanic stutterer are very typical. The stuttering usually occurs in the depressive phase. Under this fourth type also comes the stuttering seen in children just beginning to talk. In fact, with the temperamental, high-strung, overemotional type of child, stuttering is very likely to occur in which the severity of the symptom bears no relation to the distress of the patient.

Much light has been thrown on the problem of stuttering by the study of the war neurosis cases. At Base Hospital No. 117, which was a receiving hospital near the front, probably 50 per cent. of the men had some sort of disturbance of the speech, either a complete loss of speech, or a break in the rhythm, or the type of speech which Roussy and Lhermitte [3] called "nigger-boy" speech, and which we classify as oral inactivity.

SPEECH CLINIC, U. S. P. H. S. HOSPITAL NO. 37

We have had opportunity of making intensive study of the postwar neurosis cases suffering from speech disor-

1. Bastian: Aphasia and Other Defects of Speech, London, p. 75.
2. Babinski, J., and Froment, J.: Hysteria or Pithiatism, University of London Press, p. 17.
3. Roussy and Lhermitte: The Psychoneurosis of War, University of London Press, 1918, p. 92.

ders at the speech clinic of the United States Public Health Service Hospital No. 37, organized at the request of Dr. Lawrence Kolb, director of the hospital, in January, 1920. Fifty-two cases have passed through this clinic. Statistics were gathered from forty of these cases in which intensive studies have been made.

Before concluding that most of the soldier speech cases were caused by psychoneurotic mechanisms, a complete study of the physical condition was made, as well as psychologic tests for intelligence and mental imagery.

The patients in the clinic, beside having the benefit of the general staff of the hospital, are given individual training by the speech clinic staff. Only a small part of the treatment deals with the speech per se but concerns itself with general muscle training and emotional adjustment.

The sending of these cases to the neuropsychiatric hospital was justified by the classification and diagnosis of the conditions under which the patients were laboring. Fifty-seven and five- tenths were found to be suffering from hysteria; 5 per cent. neurasthenic; 30 per cent. were cases of anxiety neurosis; 2.5 per cent. had dementia praecox; 2.5 per cent. were suffering from marked psychopathic states, and 2.5 per cent. had marked hyperthyroid conditions. With such a diagnosis, the futility of sending these men for treatment in the so-called "stuttering schools" or by elocutionists or phonologists becomes apparent.

Some writers have maintained that the neurasthenia and other troubles were caused by the stuttering, and not the cause of stuttering. This we feel to be a fallacy, owing to several factors which I will present. Since the war stuttering has been studied, the fact has been brought out that the same type of temperament was present before the stuttering was developed as was shown after, and that the temperament and the hereditary factors are virtually the same in those individuals who stuttered, but who never experienced war, and in those who stuttered owing to strain in service, but who saw no active service under fire at the front, and in those who stuttered previous to service, but relapsed under the strain, and in those who did not stutter previous to experience under shell fire and in fighting.

In the comparison of forty soldiers with 200 schoolchildren from 1 to 18 years of age, some interesting facts are brought to light. A comparison of the personality showed that 13 per cent. of the children, and 9 per cent. of the soldiers were classed as showing no marked variation; 52 per cent. of the children showed marked inferiority feelings, showing themselves either in timidity or in overcompensations by extreme boldness; 54 per cent. of the soldiers came in this class; 35 per cent of the children and 34 per cent. of the soldiers were markedly moody, either of the temper, sulky, depression, or of the hypomanic types. In addition, 5 per cent. of the soldiers were apathetic and dull; none of the children were so classed. Whether this is a true variation or a mistake in classification in the group of schoolchildren would probably be demonstrated in a study of a larger group.

A study of the variation shown in the symptom of stuttering itself is indicative of its functional etiology. Of the children, twenty-two were worse at school than at home; two were worse in town than in the country; one was worse on vacations; five varied with their physical conditions; sixteen were given to complete remissions in stuttering; one stutters only in school; one stutters only in Polish; one stutters only in speaking to his father; one never stutters while at play; one never stutters with members of his own sex; one gets worse at intervals of three or four days; one is markedly worse after sleep, even a short nap; one is worse after an operation for adenoids and tonsils (undertaken to cure the stutter); one stuttered for three weeks only, and so on with such variations for virtually the entire group. Among the soldiers, six began to stutter with service at the front (five of these began with aphonia); seven were stutterers who relapsed with service at the front; one who had stuttered severely had a complete remission while at the front, until he got up into Germany and became homesick; six who had stuttered previously relapsed with service in this country (such as a fight, a runaway horse, and a close shave with an explosion); one relapsed with the draft, and one relapsed with influenza. Many of these men have trouble at the telephone, although they do not have any trouble if the receiver is closed, but begin to stutter immediately when it is opened.

If brain congestion or defective auditory imagery or malocclusion of the arch or infected tonsils were the primary cause of stuttering, rather than results or merely accompanying disorders, what part is played by the movement of the hand of a second person in the connecting of the telephone? The only real change is the knowledge of a third person listening over the wire.

We must ask, then, why every one with this type of temperament and personality, when placed in a situation similar to these described, does not break down into faulty rhythm, an over or under motivation of the speech muscle group. We believe that there is some fundamental weakness in the motor mechanism, but that whether stuttering results depends not only on the degree of this weakness in the mechanism, but also on the ability of the individual to protect this mechanism from undue strain. It is of interest, and quite significant, that of the stuttering schoolchildren studied, 51 per cent. were found possessed of other speech difficulties, as well, either substituting one sound for another, or initiating the movement with too little tension, or with under or over motivation of the diaphragm or vocal cords, resulting in so-called vocal difficulties. Often more than one of these difficulties were present in addition to stuttering. Among the soldier group only 30 per cent. had additional speech disorders, and we feel that the presence of stuttering in spite of a stronger speech mechanism may be due to the infinitely greater strain put on the adaptive faculties and the endocrine system by the conditions of the war and service.

Another factor which contributes to our belief that there is an underlying weakness of the motor system is the relatively high percentage of stutterers who have been changed from left to right handedness. Ballard [4] says that the generally conceded percentage of left handed people in the population is about 3 per cent. In the 200 schoolchildren we found 12.5 per cent. who were left handed, 11.5 per cent. of whom were changed for writing; and among the soldiers 17.5 per cent., all of whom were changed for writing.

There is also the problem of hereditary tendency. There seems to be a marked predisposition in the families of these individuals toward defects of speech—not only of stuttering, but also the other defects. In the

4. Ballard: Handword as an Educational Medium, New York, the Macmillan Company, p. 138.

families of 72.5 per cent of these cases there were defects of speech. In 52 per cent. of the families there was stuttering, and in 22 per cent. there were both stuttering and other defects. That this is not primarily a problem of imitation or faulty learning is shown by the fact that many of these patients had never seen the person so affected, for example, the grandparent stuttered, but died before the child was born, etc.

And back of this also is the problem of family adaptation to environment, a most complicated problem to handle and tabulate. The behavior of such families may be divided into several groups. A small percentage are of low grade mentality, and in this group we have the usual amount of conduct disorder, syphilis and psychopathic conditions. There was also 1.5 per cent. of insanity. But 13 per cent. of the families showed neurosis, and 25 per cent. nervous instability. Of the 47 per cent. remaining, 15 per cent. were unaccounted for, but in 32 per cent. the behavior was above average. They showed such family groups as contained musicianship of a high order, poets and people of scientific attainments, financiers, etc.; in other words, where nervous instability had been made to count in favor of society rather than against. In the patients themselves the same variation is shown, for in contrast to many of the social failures among them, we have a high percentage at the University of Wisconsin (125 in the freshman class), and many exceptionally talented people. These people have adapted partially to their speech difficulty, and adjust well in most respects, but show the typical anxiety states, and the hypomanic temperaments.

There is very little relationship between poor health and the severity of the stuttering, but an exact and surprising correlation between social adaptation and the severity of the symptom.

The treatment and reeducation of stutterers is in a chaotic condition generally, the work, where it includes drill on particular letter position being actually pernicious, and accomplishing results only where the personality of the worker instills courage or sustains the patient. Treatment is usually aimed at the symptom itself, and where relief is given to that, the underlying temperamental disability is left untouched. That results can be gotten with these patients, when the treatment is directed toward general muscle training plus the adjustment of the individual to his environment, we feel to be shown by the work of Miss Pauline Camp in Grand Rapids, Mich., who was able to dismiss 43 per cent. of her cases as arrested, and of my own clinic at United States Public Service Hospital No. 37, where 39 per cent were arrested, 17 per cent. greatly improved, 17 per cent. somewhat improved, 2 per cent. unimproved, and 25 per cent. still under treatment.

SUMMARY

We believe the disorders of speech to be due to the lack of ability to adapt emotionally to social situations, or to a faulty motor mechanism, either hereditary or acquired. We believe that the most worth-while results which are obtained at present are those which aim at the underlying cause and general hygiene, and muscle training; and that training aimed at the alleviation of the symptom alone is pernicious because it obscures the issue and in hysterical cases actually "sets" the disorder.

We feel that this problem, for so many years left in the hands of quacks and charlatans and untrained people, is most distinctly a medical problem, and that neuropsychiatric training is necessary for the diagnosis and treatment of these patients. Nor can we too strongly urge the necessity for training medical students in the value of speech disorders as a significant symptom.

ABSTRACT OF DISCUSSION

DR. WALTER TIMME, New York: Speech is one of the most complex of the higher attributes of man; and proper speech, in order to be proper, must be under the control of the high centers for praxia and gnosis in the cerebral cortex, functioning through the different motor and tension tracts involving pathways and ganglions of every level down to the peripheral end-organs. In any one of these organs and pathways a lesion, whether an actual physical one or a psychogenic one affecting the cortex and its activities, must result in stuttering. Hence, only a small percentage of stuttering is due to a disturbance in the peripheral organ of speech, the large majority being in the central or the communicating pathways. Dr. Blanton stated there was frequently an endocrine factor. From the researches of Crile it was found that the electrical conductivity of tissue is increased in hyperthyroidism. Hence there is in a certain number of cases stammering with hyperthyroidism, too rapid an interchange between cortex and peripheral end-organs, with a resulting noncoordination of thought and speech; and in those with hypothyroidism too slow an interchange for the flow of thought, both giving rise to disturbances in articulate speech.

DR. WALTER B. SWIFT, Boston: Dr. Blanton is one of the authorities in speech correction of the Middle West, and anything he says deserves consideration. He has definitely located in the cortex the etiology of stammering by saying it is a "motor weakness." Up to today, stammering has been located in almost every nerve and brain center connected with speech, and has been chased even to the subconscious and located there. Therefore, to have it put definitely as a weakness of the motor side of our speech apparatus is a new point in this field and must be looked on with due consideration. It deserves investigation. I think, however, if one characteristic of these stammerers be considered, stammering can be ruled out entirely of the motor side of speech. They can sing without the least trouble, therefore, it cannot be "motor weakness." There is another factor which leads us to locate it in the sensorium. It is the stammerer's marked lack in visual capacity. In proportion as this is corrected, in that proportion do the stammerers recover. Dr. Blanton should not waste time considering psychoses and other conditions that accompany stammering, but steady the stammering itself and the visual function behind it. If he scientifically repeated our psychologic tests, he would come to the conclusion that normal visual processes are lacking in cases of stammering. No research to date has disproved this. As to endocrine therapy in these cases, I think that this is in the experimental stage and we are not justified in making any claim for its success. We should go slow until investigators have found out whether it is any good or not. There has been much said about the subconscious etiology of stammering, and what some Freudians have "read into" this condition is entirely uncalled for—mere misinterpretation and rot. We tabu, decry and do not tolerate Freudianism in speech correction. We find no need of that form of mental masturbation.

DR. MARCUS NEUSTAEDTER, New York: I should like to have Dr. Blanton explain how it is that stammering stops while singing. All patients with hypothyroidism that I have seen in twenty-five years are sluggish in their mentality and general motor behavior, and never stammered. The quick talker, the fast eater, the lightening thinker is the usual stammerer. It would be possible to explain stammering by a functional or organic lesion in the synapse, and therefore there is inability for the impulses to produce synchronous reactions into the motor path, and the result is a sort of block and sudden discharge of many impulses simultaneously.

DR. CHARLES R. BALL, St. Paul: I am sure that stammering may be of psychogenic origin. In October, 1918, I visited the La Fauche special hospital in France for shell shock

cases. One of the dougboys was at the station, having come down to see the train go by, and I asked him the way to the hospital. He started to sputter and choke and stammer, but finally brought out the statement that he was going there himself and would show me the way. When I got there I found that about two thirds of the patients were stammerers. After I had stayed there two or three days, I began to get the sensation of wanting to stammer myself. The thing was infectious. It seemed as if a wave of hysterical stammering had swept over the whole institution and was beginning to affect me. I firmly believe I escaped this affliction only by leaving.

DR. SMILEY BLANTON, Madison, Wis.: I have given special attention to Dr. Swift's visual image theory for two or three years, and I do not feel that he has proved his point. All our patients were given imagery tests, and we found no visual imagery defect at all in most of them. Any one who has had experience with the war neuroses and the speech disorders occurring in these cases could not but admit that speech disorders might be caused by mental shock or conflict—an hysterical mechanism. In saying that there was a motor weakness back of stammering I was merely drawing logical conclusions from the facts found in the study of my cases. The fact that a large percentage of stuttering children have stuttering in the family, or that many stutterers have other speech defects, seems to show that there is some constitutional weakness in the speech mechanism of these cases. It may be true, as Dr. Neustaedter says, that stuttering is due to difficulty at the synapse: I feel, however, that the synapsis trouble may be due to emotional strain or conflict, and that if we cultivate mental poise in the patient the synapses will function properly.

Clinical Notes, Suggestions, and New Instruments

UNUSUAL OCCURRENCE OF RECURRENT MEASLES DURING CONVALESCENCE AND IN THE COURSE OF AN ATTACK OF SCARLET FEVER

JOSE C. CARBALLEIRA, M.D., FORT SILL, OKLA.
Captain, Medical Corps, U. S. Army

That it is possible for a patient suffering from one of the exanthems to develop another of the same group has long been known. Although not of daily occurrence, the phenomenon occasionally happens. But the recurrence of one of these exanthems from which the patient is convalescing, and during an intercurrence of another one of the group, is certainly a novelty.

REPORT OF CASE

Private J. S., aged 21, white, was admitted to the Station Hospital, March 23, 1921, with a diagnosis of scarlet fever which was confirmed on examination of the patient. He had not suffered from any of the childhood diseases except chickenpox. He was isolated, and proper treatment was instituted. During the first three weeks of his illness nothing abnormal occurred; he began to desquamate at the end of the first week, and the case seemed to be of a rather benign type. The temperature fell down to normal and remained so three days after admission. April 14, exactly three weeks after admission, the patient had a rise of temperature, the conjunctivae became injected, and he developed a coryza and a frontal headache. Two days later a maculopapular rash appeared over his chest, abdomen and face, which later extended to his arms and entire body. Koplik spots were present, and a diagnosis of intercurrent measles was made.

Two weeks afterward the measles rash had entirely disappeared and the patient had a second desquamation of the entire skin; still he was kept isolated and was also kept in bed on account of a rapid pulse (from 112 to 124) which now superseded the rather slow pulse that had prevailed during the acute stages of both exanthems. The urine, examined at different intervals during his illness, was negative in all respects. He had no other complications and felt perfectly comfortable with the exception of the naturally expected weakness from a protracted illness.

May 21, nine days after the measles rash had entirely disappeared and when there were no signs or symptoms of this disease present, the patient had another rise of temperature and all the common initial symptoms of measles—injected conjunctivae, coryza, photophobia, lacrimation, Koplik spots and two days later the typical maculopapular rash over the face, neck, chest and arms—made its appearance. With the advent of all these symptoms the pulse of the patient returned to the characteristic slowness of toxicity found in exanthems.

At the time this article is written, May 27, the rash is fading out from the face and chest, but still persists over both arms and forearms. The patient's temperature is normal and the pulse rate is increasing steadily; desquamation at the soles of his feet still persists, and the patient, though weak, feels comfortable.

COMMENT

So far as I know, this is the first instance in which a patient, after having passed the acute stage of an exanthem, has had a recurrence with all the characteristics of a new invasion.

The nature of the rash in this case in both instances, together with the absence of involvement of the posterior cervical glands, eliminates any possibility of German measles. How, then, could this reinfection take place under the most rigid isolation?

NICOTIN POISONING, WITH RECOVERY *

WILLIAM D. MCNALLY, A.B., CHICAGO

Nicotin is one of the most fatal and rapid of poisons, its rapidity being equaled only by that of hydrocyanic acid. The commercial preparations, containing from 8 to 43 per cent. of the alkaloid nicotin, are used in very dilute solutions as insecticides. To the more frequent use as an insecticide in recent years can be attributed the increased number of accidental and suicidal deaths from nicotin. The lethal dose of nicotin is given as 60 mg.; a much larger quantity has always been found in material submitted to me for examination.

The case which I have to report is of special interest owing to the large amount of nicotin taken.

REPORT OF CASE

C. C., a farmer, aged 75, was brought to the service of Dr. J. A. Carr, Ward 53 of Cook County Hospital, at 9:05 a. m., Aug. 20, 1920, in an unconscious condition, with a slow, stertorous breathing and a gurgling sound in the throat at each inspiration. The systolic blood pressure was 110, and the diastolic 74. The temperature was 97 and the pulse 56. The hemoglobin was 90 per cent.; the red blood cells, 5,000,000; the white blood cells, 10,600.

The pupils were equal and contracted; the throat failed to show evidence of corrosive poisons; the face was slightly flushed; there was no cyanosis, the color returning well after pressure. The breathing was shallow and the excursions were equal. The reflexes were present and bilaterally symmetrical.

The stomach was washed with water and tannic acid. The lavage with plain water was continued until the washings returned clear, and the combined washings of about 1 liter were submitted to me for examination. Tests for heavy metals were negative. A steam distillation gave a small amount of grain alcohol and an alkaloid identified as nicotin. Using the silicotungstic acid method[1] for the quantitative determination of the nicotin, I found 0.0355 gm. of the alkaloid.

A whisky flask, found in the possession of the patient, held a liquid containing 42.40 per cent. of nicotin. The brown-colored liquid has been mistaken for whisky and he undoubtedly had taken a swallow of it, or enough nicotin to kill several persons.

The patient had an uneventful recovery, regaining consciousness shortly after the stomach had been washed. His recovery was unquestionably due to early and copious vomiting, and the efficient washing out of the stomach.

* From the Department of Materia Medica and Toxicology, Rush Medical College.

1. McNally: J. Lab. & Clin. Med. 5:213 (Jan.) 1920.

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SATURDAY, JULY 30, 1921

RECENT STUDIES IN METABOLISM

As a nation, the United States may justly feel some pride in the contemplation of the progress which the study of the problems of nutrition and allied topics has made in this country in recent years. It is not long since the medical workers among us were accustomed to turn to European literature as the source of most that was novel and promising in current science; and likewise the younger investigators were wont to find their way across the Atlantic in a search for inspiration to research and scientific wisdom. The symposium of papers on metabolism that were presented at the Boston session of the American Medical Association, published in part in THE JOURNAL last week and completed in this issue,[1] indicate in a most complimentary way how virile, productive and progressive are the scientific forces which have become established on American soil. Every practitioner will receive a stimulus to better work as well as a fund of helpful suggestion from the reading of these meritorious papers.

After all, the intensive study of metabolism in American laboratories is not as new as it may seem to many whose experience does not antedate the last decade. The fundamental work of Atwater and Benedict and their associates in the development of the respiration calorimeter—an apparatus to which the late physicist Dr. E. B. Rosa also made substantial contributions—began a quarter century ago at Wesleyan University. It resulted in the splendid demonstration of the applicability of the law of the conservation of energy to the transformations that proceed in the human body as well as to the inanimate world about us. Today the practitioner speaks glibly of "basal metabolism" or "metabolic rates," scarcely recognizing how new is the knowledge with which he thus deals and how much of it scientific medicine owes to our own institutions.

What governs these mysterious changes which are designated as metabolism? How does an appreciation of their nature and variation concern the physician as well as the physiologist? As Benedict forcefully points out:

> That a strenuously active man, engaged in severe muscular work, gives off heat is not surprising to any one, but it is seldom fully realized that, even with a man in complete muscular repose, such as a bedridden patient, the end-results of all the internal glandular and muscular activities incidental to the maintenance of life is *heat*. So truly is the heat output determined by the intensity of vital processes that, conversely, it may be stated that the level of vital activity may be inferred from the amount of heat produced.

It is at length an established fact that the mass of the body cells—the active protoplasm of the organism—and their capacity to oxidize materials determines the intensity of the metabolism. To measure this has necessitated measuring the heat produced. The exact estimation of this in the human calorimeter is formidable enough for even the specially trained scientist, not to mention the less skilled clinical worker. It is fortunate, therefore, that the technic of indirect calorimetry has been developed so successfully, as Benedict has indicated. If one can measure accurately the carbon dioxid production—or, still better, the oxygen consumption—a very close estimate of the total heat production can be secured. To this end much effort has been expended in recent years with the consequent development of various forms of apparatus, good and bad, intended to measure metabolism by the principles of indirect calorimetry.

Obviously, the basal metabolism, which has been the subject of numerous comments in THE JOURNAL,[2] will vary with such factors as size and age. Hence there has arisen the need of a unit or standard of measurement. That body weight is not the real criterion has long been appreciated. In his admirable review of the fundamental ideas regarding basal metabolism, Lusk[1] has summarized the conflicting views and given evidence for the applicability of Du Bois' height-weight formula at present generally made the basis for determining surface area as the practical unit in the measure of basal metabolism. For normal persons between the ages of 20 and 40 the basal metabolism is now predictable with considerable accuracy. Variations from the expected normal give indications in many cases of disease conditions, so that the pioneer establishment of trustworthy standards, so largely a contribution of American investigators, has in turn furnished a method now widely accepted throughout the world for a closer diagnosis of several pathologic conditions. Clinically it has thus far found its most important application in the accurate recognition of the presence or absence of that hyperthyroidism which has been defined as an increase in the rate of heat formation due to the presence of an excess of the thyroid hormone in the body. Boothby[1] has pointed out that, with dependable information regard-

1. Plummer, H. S.: Interrelationship of Function of the Thyroid Gland, J. A. M. A. **77**: 243 (July 23) 1921. Benedict, F. G.: The Measurement and Standards of Basal Metabolism, p. 247. Lusk, Graham: Fundamental Ideas Regarding Basal Metabolism, p. 250. Boothby, W. M.: The Basal Metabolic Rate in Hyperthyroidism, p. 252. Means, J. A.: Determination of the Basal Metabolism as a Method of Diagnosis and as a Guide to Treatment, this issue, p. 347. Du Bois, E. F.: The Basal Metabolism in Fever, p. 352.

2. Basal Metabolism, Current Comment, J. A. M. A. **71**: 198 (July 20) 1918; The Measure of Metabolism, editorial, ibid. **73**: 110 (July 12) 1919; Applications of Clinical Calorimetry, ibid. **74**: 806 (March 20) 1920; Science in the Medical Clinic, ibid. **75**: 248 (July 24) 1920.

ing the basal metabolic rate of the patients, very sharp distinction can be drawn between mild cases of exophthalmic goiter and those conditions described as "effort syndrome," "disordered action of the heart," cardiac neurosis," "neurocirculatory asthenia," etc., which on superficial examination present some of the signs of mild exophthalmic goiter, but in which the basal metabolic rate is normal and which on close analysis can be shown not to be dependent on an excess of the thyroid secretion in the body.

Fever is one of the conditions attended with increased basal metabolic rate. At the Boston symposium Du Bois [1] showed that this increase in febrile diseases follows van 't Hoff's law of velocity of chemical reactions with temperature changes; it is about doubled for an increase of 10 degrees Centigrade. The law of the conservation of energy has been demonstrated by Du Bois to hold good in fever patients in whom we now know the metabolism to respond to a rise in temperature in a manner which closely resembles the chemical reactions in a test tube suspended in a water-bath. A rational basis for the fever dietary is now at hand. Predicting the normal basal metabolism according to surface area standards we should add, in the words of Du Bois, about 13 per cent. for each degree Centigrade above the normal temperature (7.2 per cent. for each degree Fahrenheit). This should be increased by 10 per cent. in the case of toxic patients with great destruction of body protein, and by approximately 10 per cent. in all other febrile patients who are receiving much food, with a further allowance of from 10 to 30 per cent. for muscular activity if the patients are restless.

The study of the respiratory quotient in various fevers indicates that there are no significant changes in the metabolism of fats and carbohydrates. The destruction of protein has long been known to be high in such cases. The increased protein catabolism is not, however, in every instance merely a consequence of the increased temperature. According to Du Bois it seems to be proportional to the toxemia, since it is excessive in patients seriously ill with typhoid and erysipelas, and comparatively insignificant in chronic tuberculosis patients with the same degree of fever.

The widespread interest in the latest contributions to clinical calorimetry was attested by the exceptionally large audience which gathered to hear the papers at the Boston session. It must be tempered by the fear, expressed by several of the speakers, lest the promising new technic be made the plaything of uneducated "experts" or the tool of the quack. "It is far better," Means [1] said, "to make no metabolism tests than to make them inaccurately." Remembering that the interpretation of metabolism "tests" now exceeds in complexity the actual laboratory technic, those who are interested in the sound advancement of clinical medicine should educate themselves first of all in the fundamental significance of the gaseous metabolism.

ANEMIA, IRON, AND BLOOD REGENERATION

The use of iron compounds in the treatment of anemia was common long before the date when the element was discovered, in 1746, to be a constituent of the red blood corpuscles. This early iron therapy was essentially empiric. The practice gave rise to traditional methods of prescribing iron which have persisted to the present day. It would be rash to deny the possible value of iron therapy in anemia even in the absence of convincing scientific experiments to justify the procedure; for long established practices of this sort which have survived the changes of therapeutic customs from decade to decade are more than likely to be found to have some feature of justification when knowledge grows to the extent of disclosing the true situation. Empiricism should never be hastily condemned nor its dictates rashly discarded. Scientific research may properly demand, however, that even empiric procedures shall stand the test of experimental investigation directed toward justifying them.

During the latter years the views of pharmacologists regarding the function of administered iron have undergone repeated changes while the therapeutic practice has continued. The once popular view of the physiologist Bunge, who recently died in Basle, Switzerland, has been abandoned. He argued that organic iron compounds are most serviceable in therapy. Animal and plant products which serve as foods contain compounds of iron in organic combination. These were assumed to be the really assimilable forms of iron, inorganic salts of the element serving merely to protect the "food iron," which was alleged to be converted readily into insoluble sulphid in the intestine by the action of hydrogen sulphid arising there through putrefactive changes. The Pharmacology of Useful Drugs,[1] issued by the American Medical Association, gives a logical statement of the present day view. The theory of Bunge, it reminds us, is no longer held by physicians or pharmacologists, but it is still urged by certain interested manufacturers as the basis for their claims for the value of their preparations. On this basis is urged the use of preparations of manganese which are employed in anemia, as it is claimed that the manganese unites with the hydrogen sulphid, thus sparing the iron of the foods for absorption. One need only remember that iron is absorbed mainly in the duodenum and that there is no hydrogen sulphid in that part of the intestine, to recognize that administration of manganese cannot affect the absorption of iron. It is unnecessary to review the literature of a long controversy. Today we need no longer argue that iron is assimilable alike from its organic or from its inorganic combinations. It is more than likely that in either case ionized iron appears in the intestinal lumen and is absorbed as such.

The use of iron in anemia was long justified on the assumption that a shortage of the element occurred in

1. Hatcher, R. A., and Wilbert, M. I.: Pharmacology of Useful Drugs, Chicago, American Medical Association, 1915, p. 362.

the body when the blood lost some of its iron-containing hemoglobin. It may be admitted frankly that if there were an actual deficit of iron, that is, if the dietary intake were too small to permit the restitution of the ferruginous blood constituents, administration of the element in assimilable form would seem rational. But ordinary human dietaries are rarely highly deficient in iron; and, furthermore, the usual therapeutic doses are large out of all proportion to even the theoretical shortage. If, then, the iron is not actually needed as such, and if it can no longer be argued to act as a protective agent in Bunge's sense, some other justification for iron therapy in anemia must be sought. Hence has arisen the theory that iron salts stimulate the hematopoietic organs in some specific way quite apart from their possible function as structural units in the genesis of red corpuscles. The seat of the stimulating activity is ordinarily located in the bone marrow by writers on this subject.[2] Müller's investigations [3] are often referred to in defense of this view. It is further regarded as likely that iron salts promote growth and metabolic changes in other tissues, the improvement in nutritive conditions in chlorotic patients being cited as an illustration.

Until recently, most investigators in this difficult field have overlooked the possible rôle of dietary factors in blood regeneration. In an elaborate research at the George Williams Hooper Foundation for Medical Research in the University of California Medical School, Whipple and Robscheit [4] have studied the possible influence of iron salts and other substances supposedly stimulating regeneration under carefully controlled conditions of feeding. The outcome will be disappointing to the empiricists. It shows that iron in the form of Blaud's pills is inert when given under controlled conditions in anemia periods under the conditions of these experiments. Ferric citrate and the organic "ovoferrin" give no better results. Hemoglobin seems to bring about somewhat more favorable responses, but this result need not be attributable to the iron in the compound. Again, two other "favorites"—arsenic in the form of sodium cacodylate or of liquor potassii arsenitis (Fowler's solution)—were tested and found inert. In fact, no drug tested could compare with suitable dietary factors in stimulating a rapid regeneration of hemoglobin during these anemia periods induced by simple hemorrhage. One can consequently scarcely disagree with the California investigators that many of the iron preparations commonly prescribed are inert, or, at least, much less potent than simple diet factors. As they say, their carefully controlled experiments give no support to the time-honored custom of administering iron and certain other drugs in conditions of simple anemia. The burden of proof now rests with those who claim that any given drug is potent under such conditions. There will be something constructive as well as destructively critical in these new researches if they teach a more wholesome respect for the interrelations of dietary factors and the capacity of regenerating the blood.

2. Meyer, H. H., and Gottlieb, R.: Die experimentelle Pharmakologie, Berlin and Vienna, 1921, p. 499.
3. Müller, F.: Virchows Arch. f. path. Anat. **164**, 1901.
4. Whipple, G. H., and Robscheit, F. S.: Iron and Arsenic as Influencing Blood Regeneration Following Simple Anemia, VI, Negative Influence of Familiar Drugs on the Curve of Hemoglobin Regeneration Following Hemorrhage, Arch. Int. Med. **27**: 591 (May) 1921.

OXYGEN AND MUSCULAR FITNESS

It is a matter of common physiologic knowledge that there are places in which the oxygen supply may be entirely inadequate for well being, and likewise circumstances under which, even in an ordinary atmospheric environment, respiratory distress due to a deficiency of oxygen may arise. At high altitudes or low barometric pressures the functions of the human mechanism may be interfered with. The essential cause of the disturbances thus arising is lack of oxygen, and the consequent imperfect aeration of the arterial blood with this gas. This explanation has become a permanent acquisition of science since the classic work of Paul Bert published in 1878. The call for oxygen comes from the active cells of the tissues in which oxidation takes place. Hence, to insure well being, the oxygen pressure in the blood must be sufficiently high to supply the needs of the cell in the brief interval of time that the blood is passing through the capillaries.

The physiologic observations made on men and animals living at high altitudes or under reduced atmospheric pressures show clearly that a very marked process of adaptation occurs which renders the mechanism capable of meeting the call of the tissues for oxygen. The Manual of the Division of Military Aeronautics of the War Department [1] further states that an aviator must be able to adapt himself physiologically to altitude changes. The aviator does not remain at high altitudes long enough to benefit from slow adaptive physiologic changes; therefore his body must be capable of making rapid compensatory changes which will provide the oxygen needed by the tissues. He must be able to bear abrupt and great changes in atmospheric pressure. Without the occurrence of some one or more definite adaptive physiologic responses to provide for his oxygen needs as he ascends, his life and aeroplane become more and more jeopardized as he continues to ascend.

It is conceivable, however, that in some instances when the person cannot adapt himself to new needs for oxygen, the supply of the latter can be enriched by outside sources. To what extent this is possible has often been the subject of discussion. When hard muscular work is being done, the consumption of oxygen may rise to many times the resting value. As a recent writer has pointed out anew, in the muscles at work there must be a much greater proportional increase of consumption, and such an increase can be secured only by an enormous addition to the blood circulation through

1. Manual of Medical Research Laboratory, War Department, Air Service, Division of Military Aeronautics, Washington, 1918.

those muscles. Failure to supply the additional blood, whether due to defects in blood distribution or to cardiac efficiency, must, therefore, bring about local anoxemia in the muscles, resulting in a cessation or reduction of the exertion.

Accordingly, Briggs,[2] conducting experiments for the Mine Rescue Apparatus Research Committee in Great Britain on fitness during exertion, has attempted to furnish oxygenated air to persons engaged in heavy tasks. It appears that physical work is found by experience to be easier to unfit men when oxygenated air is breathed than when normal air is breathed, but no such difference is to be observed with fit men. On an overload, even the fittest man derives benefit from breathing enriched air. The benefit of breathing enriched air when doing physical work is limited to air containing about 60 per cent. of oxygen. Enrichment above that proportion has no effect during exertion, even on very unfit persons.

Since Briggs' investigations indicate that in contrast with the unfit man, a fit person derives less benefit from addition of oxygen to the air inspired during severe muscular exertion, one naturally assumes some compensatory mechanism in the worker trained for efficiency. Pointing out that the lungs of the fit man seem to absorb oxygen more readily from normal alveolar air during exertion, Briggs assumes that this might be due either to some anatomic change which makes simple diffusion occur more readily through the lung epithelium of the fit man, or to active secretion of oxygen inward by the lung epithelium. The latter assumption is a revival of the secretion hypothesis championed by Haldane and dismissed by others as untenable. For the present, the exact nature of the adaptation produced by physical training and by certain vocations—that is, the nature of physical fitness—remains a physiologic mystery.

MORE ABOUT WAR GASES AND INFLUENZA

The cause of death in acute gas poisoning has usually been assigned to pulmonary edema. An accumulation of fluid in the lungs is a common manifestation of the acute effects of the lethal war gases, for example; but the elaborate studies of Underhill[3] and his associates have directed attention to other attendant phenomena which unquestionably deserve serious consideration. The first stage of the acute gas poisoning is associated with a notable decrease in the concentration of the blood. This is quickly followed by the second stage, which is characterized by a rapid concentration of the blood far above the normal level. Most of the fatalities occur in this period. From a large amount of experimental data it may be concluded that in acute gas poisoning the prominent features include edema of the lungs, a highly concentrated blood and an evident need of oxygen in the tissues. In the later stages of gas poisoning the picture presented resembles strongly that characteristic of a pneumonic process.

The importance of establishing these claims beyond peradventure lies in the fact that they point the way to the most likely therapeutic procedures. As blood concentration means a failing circulation, an inefficient oxygen carrier, oxygen starvation of the tissues, fall of temperature and, finally, suspension of vital activities, it has been proposed that the blood concentration should be maintained as near the normal level as possible by venesection and fluid introduction under carefully controlled conditions. Such evidence as was accumulated in experimental therapy by the Chemical Warfare Service of this country before the end of the World War seemed to justify the conclusions just expressed.

It now appears that investigations conducted by the German military medical service have substantiated the American findings in several respects. Thus, Laqueur and Magnus,[4] who conducted their studies in Berlin, report, in writing of the effects of the characteristic gas phosgen, that the loss of blood plasma diverted to the lungs brings about a very marked concentration of the formed elements of the blood, accompanied by an augmented viscosity of the medium and a retardation of circulation. The German investigators specifically point out that the subsequent discharge of tissue fluids into the blood stream is inadequate to produce the requisite dilution. As a sequence of all these undesirable features, the tissues experience a lack of oxygen. Many organs consequently suffer.

In view of this information, the European workers also have directed attention to the restoration of better blood conditions as an aid in therapy. Thus, Laqueur and Magnus[5] discuss the value of saline infusion, but place venesection in the forefront of the effective measures. They regard bloodletting as the "sovereign procedure" in combating blood concentration, since they have found it to be followed by prompt dilution of the fluid. Even the possible aids of water drinking and rectal instillation are not overlooked in the swiftly arising emergencies of acute gas poisoning. Laqueur and Magnus[5] have also recommended the subcutaneous injection of solutions of salts of calcium on the hypothesis—assuredly still debatable—that this element has an effect in rendering capillaries less permeable and consequently retarding the genesis of pulmonary edema. Finally, the use of suitable drugs to facilitate the impaired work of the heart and prevent fatal anoxemia is not forgotten.

These experiences in the field of the experimental therapy of conditions brought on by the novel weapons

2. Briggs, H.: Physical Exertion, Fitness and Breathing, J. Physiol. **54**: 292 (Dec.) 1920; Second Report of the Mine Rescue Apparatus Research Committee, 1920.

3. Underhill, F. P.: The Physiology and Experimental Treatment of Poisoning with the Lethal War Gases, Arch. Int. Med. **23**: 753 (June) 1919; Harvey Lectures, 1917-1919, Philadelphia, J. B. Lippincott Company; Lethal War Gases, New Haven, Conn., Yale University Press.

4. Laqueur, E., and Magnus, R.: Ueber Kampfgasvergftungen, III, Experimentelle Pathologie der Phosgenvergiftung, Ztschr. f. d. ges. exper. Med. **13**: 31, 1921.

5. Laqueur, E., and Magnus, R.: Ueber Kampfgasvergiftungen, V, Experimentelle und theoretische Grundlagen zur Therapie der Phosgenerkrankung, Ztschr. f. d. ges. exper. Med. **13**: 200, 1921.

of modern warfare would scarcely warrant such detailed reference in the days of peace were the essential facts not related to some of the diseases of everyday life. The similarity between the respiratory complications produced by the lethal war gases chlorin, phosgen and chlorpicrin and those of influenza have been emphasized in particular by Winternitz [6] and his co-workers. In each, pulmonary edema is a prominent feature. Underhill and Ringer [7] have shown further that in influenza also the blood becomes greatly concentrated. This constitutes a factor of the greatest importance in the fatal outcome. Perhaps greater progress can be made in the treatment of influenza hereafter if the lessons of the related conditions just discussed—lessons now learned on two continents—are kept in mind in the future management of the reactions induced by the disease.

Current Comment

THE POLLUTION OF WATER

At the meeting of the American Public Health Association in San Francisco, an experienced biologist made the startling statement that if present conditions continue, the greater part of the eastern United States will be cradled in a septic tank.[8] The growing sewage pollution of our rivers and seashore has long been recognized as a problem of serious moment. There is one aspect of the subject, however, that is not generally understood. House sewage, which represents human wastes, may, of course, contain the microorganisms of infectious disease and thus represent a potential menace to those who drink water or eat food that have been contaminated by it. But domestic sewage ordinarily contains nothing detrimental to the growth of the aquatic organisms, which help to complete the disintegration of the excreta and which thrive on it. Sewage, indeed, supplies a source of plant and animal nutriment in the water as truly as on the soil. Nelson reminds us that under favorable conditions a small stream may dispose of the sewage of a relatively large population, and the stream in turn be supplied with a constant source of animal and plant nutriment. There is a true fertilizing action on the water, with a resultant large increase in the number of the organisms present. Since fish and shellfish utilize these plant and animal organisms as food, it follows that the addition of domestic sewage to a body of water will result ultimately in an increase in the amount of human food, in the form of fish and shellfish derived from it, as truly as though the sewage were employed in fertilizing land crops. The danger of eating shellfish removed from grossly polluted water thus lies in the presence of pathogenic bacteria, rather than in the inert organic matter present in the medium. The problem of purification of such products as oysters primarily becomes one of sanitary bacteriology. It can be met by avoiding the pollutions; or, if this is not entirely feasible, the food can still be conserved by disinfection procedures. But of late the oyster itself is becoming threatened with extinction because of an added kind of contamination represented by the great industries which discharge effluents into the streams reaching the coast. Oils, acids and alkalis, metallic poisons and other chemical compounds may interfere with all forms of life, whether micro-organisms which themselves aid in the self-purification of our natural waters, or the animals and plants which normally thrive and develop in them. In other words, the disposal of industrial wastes has complicated the disposal of human waste, and incidentally an important source of delectable human food is likely to be impaired. Something remedial must be done, and soon.

6. Winternitz, Wason and McNamara: The Pathology of Influenza, New Haven, Conn., Yale University Press, 1920.
7. Underhill, F. P., and Ringer, Michael: Blood Concentration Changes in Influenza, J. A. M. A. 75: 1531 (Dec. 4) 1920.
8. Nelson, T. C.: Some Aspects of Pollution as Affecting Oyster Propagation, Am. J. Pub. Health 9: 498 (June) 1921.

FLORIDA'S NEW PRACTICE ACT

After several years of effort a new medical practice law has finally been secured in Florida, clearing away the obsolete multiple board arrangement which for many years has caused much confusion in medical licensure in that state. The new law establishes a composite board which has full authority to refuse or revoke licenses, to refuse recognition to low grade medical colleges and to protect the public against incompetent physicians. The personnel of those appointed on this board promises assurance that the provisions of the new law will be enforced. The people of Florida are to be congratulated on the successful passage of this law, and it is hoped that they will appreciate its importance and support its vigorous enforcement. The only flaw in the act is that osteopaths and chiropractors are exempted from the requirements of the medical practice act since, for the time being, their practice is regulated by separate boards. In time, however, when public opinion has been awakened to the injustice and unwisdom of providing an inferior standard of qualifications for any group of healers, these special boards may be abolished, as they were this year in New Jersey. Public opinion will not long uphold an evident injustice, once attention has been clearly called to it.

THE DIAGNOSIS OF INTESTINAL OBSTRUCTION

The threatening character of the constitutional symptoms associated with acute intestinal obstruction makes the condition one of unusual gravity for the patient. The differential diagnosis is often difficult in the early stages; yet, as surgical intervention often offers the most promising prospect of successful treatment, the early recognition of intestinal obstruction as such becomes highly important. Delay long beyond the inception of the symptoms may be fatal. The somewhat lively debate that has been provoked among American investigators by the various hypotheses as to the etiology of the peculiarly severe constitutional manifestations of intestinal obstruction or ileus need not be entered on here. It has now been well established that when acute obstruction is produced experi-

mentally on animals there is in the majority of instances a definite increase in the noncoagulable nitrogen which is likely to be more striking and constant in the cases associated with symptoms of acute intoxication.[1] The toxemia appears to be attended with a definite impairment of the excretory function of the kidney, as shown by a decrease in the ratio of urea and sodium chlorid excretion and a decrease in the percentage output of phenolsulphonephthalein in functional tests. The validity of some of these findings in the clinic of human disease has been indicated by the studies of several investigators. Applying the methods of microchemical analysis of the blood to a series of cases in the Presbyterian Hospital, New York, Louria [2] has found a distinct increase in the urea content of the blood. The highest figure reached 170 mg. of urea nitrogen in one instance. All of the seven carefully selected cases studied were free from any evidence of chronic renal disease; hence Louria believes it fair to assume that the elevation in the blood urea nitrogen was the result of the acute intestinal obstruction. Now that chemical blood analysis has become a common procedure in well organized hospital routine, the prospect of its aid in the earlier recognition of acute intestinal obstruction deserves consideration.

VITAMIN A AND RICKETS

In a recent issue of THE JOURNAL,[3] attention was directed to the unwisdom of regarding rickets as a disease bound up solely with one dietary factor which may be deficient in the ration. Fortunately for the attack on the problems of this malady, which has a widespread incidence, it has become evident of late that some, if not all, of the pathologic characters of rickets can be induced in experimental animals by special conditions imposed by the investigators. The discovery of the true etiology of the disease is thus brought nearer. One effect of recent studies is to negative the idea at present widely prevalent, owing to the contentions of Mellanby as the results of his experiments on dogs, that the ultimate cause is a deficiency in the diet of "antirachitic factor," a substance which he thinks is probably identical with fat-soluble vitamin A. The numerous comparable observations of rats cannot be explained by such a simple hypothesis. Furthermore, the researches of Mackay [4] at the Lister Institute in London on growing kittens corroborate on a new species of experimental animal what American workers have already asserted.[3] When kittens are fed on a diet deficient in vitamin A, but otherwise theoretically adequate, they become emaciated and finally cease growing. Mackay's animals suffered from diarrhea and abdominal distention. They gave evidence of unquestionable malnutrition, as might be expected from the deficient character of the diet. In fact, the observers regarded the appearance presented as extremely like the clinical picture of celiac disease in children. Nevertheless, no evidence of rickets was found in any case postmortem, according to Tozer,[5] who made the examinations. The enthusiasm for the modern vitamin deficiency disorders must not be allowed to obscure the complexity of diseases which are at most only in part explained thereby.

1. Cooke, J. V.; Rodenpaugh, F. H., and Whipple, G. H.: J. Exper. Med. **23**: 717 (June) 1916.
2. Louria, H. W.: The Blood Urea Nitrogen in Acute Intestinal Obstruction, Arch. Int. Med. **27**: 620 (May) 1921.
3. Further Facts About Rickets, editorial, J. A. M. A. **76**: 1844 (June 25) 1921.
4. Mackay, H. M. M.: The Effect on Kittens of a Diet Deficient in Animal Fat, Biochem. J. **15**: 19, 1921.
5. Tozer, F. M.: The Effect of a Diet Deficient in Animal Fat on the Bone Tissue (Rib Junctions) of Kittens, Biochem. J. **15**: 28, 1921.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Physicians' Office Building.—As an outcome of the purchase of the Tucson-Arizona Sanatorium by a coalition of physicians, the entire building now occupied by the Arizona Hospital will be used as offices for physicians. A first-aid operating laboratory for handling emergency cases will be maintained in the building. All cases not emergency will be transferred to the new hospital quarters.

CALIFORNIA

Chiropractor Convicted.—A news report states that L. D. Treseder, chiropractor of San Jose, was recently convicted of violation of the state medical law, on the charge that he was practicing without a license.

Anesthesiology Required for Physician and Surgeon's Certificate.—The governor has signed Senate Bill 401 which adds "anesthesiology hours 32" to the minimum requirements of a physician and surgeon's certificate. California is the first state in the Union to make anesthesia a required subject in the medical curriculum.

Personal.—Surg.-Gen. Merritte W. Ireland conducted the graduation exercises of the nurses at Letterman Hospital, San Francisco. A reception was given by the officers and women of Letterman Hospital at Red Cross House, July 14, for General Ireland, and a complimentary dinner was given for him at Tates-at-the-Beach by five graduates of the Army Medical School at Washington, class of 1910, who are now stationed at Letterman.——Dr. F. W. Hatch, state superintendent of state hospitals and asylums, after being employed by the state for twenty-four years, has resigned, the resignation to become effective, July 29, when the government reorganization laws, placing all state institutions under one head and department, also become effective.——Dr. Donald R. Smith has been appointed superintendent of the Mendocino State Hospital, Talmage, to succeed Dr. Robert L. Richards.

DISTRICT OF COLUMBIA

Legislation for Control of Midwives.—Senator Ball has introduced a bill into the Senate providing for the regulation of the practice of medicine and midwifery in the District of Columbia. The measure provides for the appointment of a board composed of six physicians and three citizens. The board is empowered to issue licenses, and the practice of medicine or midwifery is prohibited except under this license. A fee of $90 is charged by the board for each license. The measure was referred to the Senate Committee on the District of Columbia.

GEORGIA

Chattahoochee Valley Medical and Surgical Association.—The annual meeting of the association was held, July 13-15, at Warm Springs, under the presidency of Dr. William C. Gewin, Birmingham. Dr. John J. Pemberton of the Mayo Clinic, Rochester, Minn., and Dr. Roy C. Long, Asheville, N. C., were among the speakers. An old-fashioned barbecue was served, July 13. The following officers were elected for the coming year: Dr. Frank K. Boland, Atlanta, president; Dr. Marcus M. Skinner, Selma, Ala., vice president; Dr. William J. Love, Opelika, Ala., secretary-treasurer, reelected.

IOWA

Personal.—Dr. Henry C. Eschbach, Albia, has been appointed a member of the state board of health to succeed Dr. Walter L. Bierring, Des Moines, whose term expired, July 1.

LOUISIANA

Injunction Made Permanent.—Recently the Louisiana State Board of Medical Examiners secured an injunction restraining Otis E. Cronk, a chiropractor of Alexandria, from practicing in Louisiana without a license. A rehearing later, given before the district court at Alexandria, has made the injunction permanent.

MAINE

Public Health Meeting.—The Maine Public Health Association met, July 13, at Augusta, under the presidency of Dr. Elmer D. Merrill, Foxcroft, and adopted new by-laws which provide for a definite plan of affiliation of the local associations with the state organization and specify that the local association shall elect representatives to the board of directors of the state association. The new by-laws also make it possible for posts of the American Legion, labor unions and fraternal organizations to become affiliated with the public health association by the payment of a certain fee, and to have representatives in the association.

MARYLAND

Personal.—Dr. Moses M. Savage, Baltimore, a member of the staff of the Hebrew Hospital, will sail shortly for Europe and will visit Hamburg, Berlin and Vienna during his stay abroad.

Joint Meeting.—A joint meeting of the Baltimore County Medical Association, the Carroll County Medical Society, and the Maryland Psychiatric Society was held, July 20, at the Springfield State Hospital, Sykesville, at which time recommendations for the future care of the mentally defective of the state were made by Dr. Thomas H. Haines, of the National Committee for Mental Hygiene, who is in charge of a survey of the mentally defective in Maryland.

MISSOURI

North Missouri Medical Association.—The association will hold its next annual meeting at Chillicothe, June 19, 1922. Dr. Morgan L. Clint, Meadville, is president and Dr. Edward S. Smith, Macon, is corresponding secretary.

Hospital News.—The Callaway County Hospital was opened, June 30, at Fulton. It is the second hospital to be erected and in operation under the new law permitting counties to issue bonds for the erection of general hospitals in the counties.

New Director of Bureau of Child Hygiene.—Dr. I. D. Krauss, of the U. S. Public Health Service Hospital at St. Louis, has been appointed director of the bureau of child hygiene of the state board of health. This bureau was established several years ago through the cooperation of the U. S. Public Health Service and Dr. Carlisle P. Knight was detailed by the service to act as director. Under Dr. Knight's guidance the bureau has grown to be one of the most effective divisions of the state board of health, and at the last session of the legislature an appropriation was made that enables the board of health to conduct the bureau under its own auspices. Dr. Knight has been released from service in the bureau and transferred to another field. Dr. Krauss assumed charge of the work, July 1.

MONTANA

New Officers of Montana Association.—At the recent meeting of the Medical Association of Montana, the following officers were elected for the ensuing year: president, Dr. Wyman F. Andrus, Miles City; vice presidents, Drs. Charles F. Watkins, Billings; Aloysius N. Dolan, Great Falls, and Percy S. Rennick, Stevensville; secretary-treasurer (reelected), Elmer G. Balsam, Billings.

NEW MEXICO

Personal.—Dr. Royal B. Tracy, formerly neuropsychiatrist for the public health service of New Mexico, has been appointed by the board of the State Hospital for the Insane, Las Vegas, N. M., as medical director of the institution, to succeed Dr. William R. Tipton.——Dr. Alfred A. Strauss, surgeon, Michael Reese Hospital, Chicago, delivered an address on stomach surgery, July 14, before the Bernalillo County Medical Society, at Albuquerque.

NEW YORK

New Research Laboratory.—The Cosmopolitan Cancer Research Society has recently been formed in Brooklyn to study cancer and disseminate information as to the nature of the disease, its causes, methods of prevention and treatment. The society will cooperate with federal, state and municipal health departments, hospitals, medical societies and all organizations through which education and service to the people may be extended. It is establishing a complete laboratory for its research work, which will be the nucleus for a much larger institution and the establishment of branches in various cities.

New York City

Hospital News.—The preliminary campaign to raise $1,000,000 for the Broad Street Hospital began with a luncheon at the Hardware Club, July 22. It was decided to begin the active compaign, August 1. One half the sum will be used to complete the new building, and the remainder will go into the hospital fund.

Governor Inspects State Hospital.—Owing to criticisms alleging that ex-soldiers who were inmates of the Manhattan State Hospital were not receiving proper care, Governor Miller has inspected the institution. He reports that he has found the criticisms absolutely groundless. On the contrary he finds that the men are being well cared for and are receiving all reasonable comforts.

New York Association for Medical Education.—According to an announcement made by its secretary, Dr. Otto von Huffman, the Carnegie Foundation has offered to make a donation of $12,000 to the association on condition that the medical profession shall raise $3,000. The raising of this sum will enable the association to continue its activities which have been curtailed of late because of lack of funds. This association was organized two years ago to collect information in regard to postgraduate medical instruction and to develop such courses in New York.

Intensive Study of Rickets.—A special committee has recently been formed, composed of representatives of the bureau of child hygiene of the New York City Department of Health and the Association for Improving the Condition of the Poor, for the purpose of formulating a program for the prevention of rickets. The study is to be carried on in the Mulberry Health Center, located in the Italian district, Broadway, the Bowery, Canal and Houston streets. The committee consists of: Prof. H. C. Sherman, Prof. Mary S. Rose, Prof. Graham Lusk, Dr. Alfred F. Hess, Dr. Charles Hendee Smith, Dr. Louis C. Schroeder, Dr. Jules M. Blumenthal, Dr. Jacob Sobel, Mr. Bailey B. Burritt and Mr. John C. Gebhart. The purposes of the study are: (1) to ascertain the prevalence of rickets among the children born of Italian parentage, in those nursed exclusively, and in those fed artificially; (2) to prevent rickets by various measures, such as the use of cod liver oil, sunlight and fresh air, diet, hygiene, etc.; (3) by the use of cod liver oil to cure the condition after it has appeared.

OHIO

Gift to Medical School.—It is reported that Western Reserve University has received $500,000 from Mr. Samuel Mather to be used in the construction of the new medical college building.

OREGON

State Deputy Health Officers.—As the result of an agreement which has recently been signed by the Oregon state health officer and the district forester, forest supervisors in charge of national forests have been appointed to serve, without pay, as deputy state health officers. The duties of these supervisors are to report on sanitary conditions and violation of the Oregon health laws occurring within the national forests, to advise violators as to the health laws; if violations are continued, the matter is referred to the state health officer.

New Medical School Building.—The board of regents of the University of Oregon has finally accepted and approved the finished plans for the second new University of Oregon medical school building on the campus on Marquam Hill in Portland. The building will cost about $250,000, nearly one half of which has been provided in a gift from the general education board of the Rockefeller Foundation. The building will be of reenforced concrete and brick. It will be three stories high and will house the administration offices, the library and extension of the laboratory departments and portions of the clinical departments of the school. Completion of this building will enable the enrolment of larger

classes which are now limited to sixty each. Construction will begin at once, and it is expected that the building will be completed in time for the opening of the school year in the fall of 1922.

PENNSYLVANIA

Hospital News.—The board of directors of the Grand View Hospital, Sellersville, announce that that public institution is clear of debt. The hospital is conducting a campaign to raise $75,000.

Cancer Clinic.—Under the auspices of a committee on cancer of the Medical Society of the State of Pennsylvania, a cancer clinic was held at the Geisinger Hospital, Danville. The main address was given by Dr. Joseph C. Bloodgood, Baltimore, on "Demonstrations and Diagnostic Clinic." Dr. Jonathan Wainwright, Moses Taylor Hospital, Scranton, who is in charge of the cancer research work of the Pennsylvania state department of health, was also among the speakers.

County Medical Directors.—Dr. Edward Martin, state commissioner of health, has appointed the following county medical directors, effective July 15: Dr. John A. Levens, Woodlawn, Beaver County; Dr. Carlyle Haines, Sayre, Bradford County; Dr. Harold Bruce Boring, Richlandtown, Bucks County; Dr. Ray L. Stackpole, Butler, Butler County; Dr. Alexander H. Stewart, Indiana, Indiana County; Dr. William D. Martin, Dunns Station, Washington County; Dr. Robert E. Lee McCormick, Irwin, Westmoreland County, and Dr. Richard O. Miller, Erie, Erie County.

Philadelphia

Personal.—Dr. Antoinette Russell, who has been doing relief work for the American Friends' Service Committee in Serbia, has returned home.

To Study Tuberculosis Cure.—One hundred Philadelphia physicians made a visit to the tuberculosis sanatorium at Eagleville, July 21, to study at first hand the most modern treatment for tuberculosis. The treatment was explained by Dr. Abraham J. Cohen, director of the sanatorium, who has used it successfully since 1909. In that year the sanatorium was established and of the 3,000 cases it has handled since that year, 82 per cent. of those in the early stages have been cured.

Improvements on City Hospitals.—Construction and supply contracts totaling more than $120,000 for the city's hospitals were signed by Mayor Moore, June 20, and include much additional work on the Philadelphia General Hospital at Thirty-Fourth and Pine streets. Nearly $1,000,000 worth of work on the three big city hospitals for general cases, contagious and mental diseases will be started this summer by Dr. C. Lincoln Furbush, director of the department of public health, as part of his modernization program. The money is provided out of the $33,000,000 loan voted by the people last November and contracts are rapidly being placed for the execution of the work.

VERMONT

Compensation for Reporting Communicable Diseases.—Under an amendment to section 3820 of the general laws passed at the last session of the legislature, physicians will receive from the town 25 cents for each report of a communicable disease made to the district or city health officer. However in the case of venereal diseases or tuberculosis, the reports are submitted to the secretary of the state board of health. Only one report of a communicable disease during a given period of illness in a family will be paid for. Reports must be made as complete as possible on forms furnished by the state board of health.

VIRGINIA

Personal.—Dr. Walter C. Klotz, Charlottesville, has resigned as medical director of the Blue Ridge Sanatorium to accept an appointment to take charge of the National Sanatorium, Johnson City, Tenn.

WASHINGTON

Personal.—Dr. Frank P. Witter, Spokane, has been appointed to the medical license examining board in place of Dr. George W. Ingham, Olympia, who declined the office because he could not spare the time from his practice.——Dr. B. E. Elvin, Spokane, was appointed to the state board of health.——Dr. George Thomas Palmer, president of the Illinois Tuberculosis Association and member of the board of directors of the National Association was the principal speaker at the annual meeting of the Washington Tuberculosis Association, held at Aberdeen, July 28-30.

CANADA

Personal.—Dr. George W. Graham, Toronto, has been appointed temporarily to the office of chief coroner for that city. The names of some other medical men, four in number, have been mentioned as associates but these have not been confirmed, as there are to be several changes in connection with the holding of inquests and the appointing of coroners in the near future.

GENERAL

Willis-Campbell Antibeer Bill Delayed.—The Willis-Campbell antibeer bill, which has passed the House and is now before the Senate, will not come up for final vote at once. An effort of Senator Sterling in charge of the measure in the Senate to fix a definite date upon which a vote should be taken was defeated.

Accept Appointments as Consultants.—Drs. George Dock, St. Louis; Otto Folin, Boston, and Ludvig Hektoen, Chicago, have accepted appointments as consultants to the National Pathological Laboratories to advise on methods used, interpretation of results and ethical policies.

A Grant for Research.—The American Pharmaceutical Association will have available, after Oct. 1, 1921, a sum amounting to about $360, which will be expended for the encouragement of research. Investigators desiring financial aid in their work should communicate, before September 1, with Prof. H. V. Arny, chairman, American Pharmaceutical Association Research Committee, 115 West Sixty-Eighth Street., New York, giving their past record and outlining the particular line of work for which the grant is desired.

Sweet Bill Passed by Senate.—The Sweet bill providing for the establishment of a Veterans' Bureau in the Treasury Department consolidating the War Risk Insurance Bureau, the Vocational Rehabilitation Board, and agencies of the U. S. Public Health Service dealing with former service men, passed the Senate, July 20. The measure had already passed the House in June. Several amendments dealing with minor changes in the bill were added by the Senate Finance Committee. The proposed act now goes to conference between the two houses and later to the White House for the President's signature.

Increase in Pellagra in the South.—The U. S. Public Health Service has issued statistics on the alarming increase of pellegra in the South. The figures show that there may be double the number during the present year as compared with last year and that in some parts of the South the increase will triple previous records. In one state where the figures are at hand, 1,817 cases developed in May, 1921, in comparison with 677 cases in May, 1920. The situation is said to be due to the failure of the cotton crop making it necessary for the small farmers to resort to salt pork, cornbread and molasses as their daily diet without alteration.

First Aid Classes in Postoffices.—Lee K. Frankel, director of public welfare of the Postoffice Department, has arranged with the American Red Cross to organize classes in first aid in the postoffices of the country. First aid kits at cost will be provided for postoffices and throughout the railway mail service. Instructors will be sent around the country to give instruction to postal employees in their use. It is also proposed to have classes in home hygiene and care of the sick organized for the benefit of the women employees of the Postoffice Department. Postmaster-General Hays has approved these plans of public welfare in the department.

American Roentgen-Ray Society Appoints Committee of Safety.—At the last annual meeting of the American Roentgen-Ray Society a committee of safety was appointed to give consideration and correct data regarding injuries due to the operation of roentgen-ray apparatus. This material will be utilized to determine the cause of accidents and the best means of preventing them. Communications relative to such accidents may be addressed to any member of the committee, which includes Drs. W. D. Coolidge, Schenectady, N. Y.; Preston M. Hickey, Detroit; Henry K. Pancoast, Philadelphia; George W. Holmes, Boston; J. S. Shearer, Ithaca, N. Y.; or the secretary, Miss Doris Keeler, Rockefeller Hall, Ithaca, N. Y. Special outlines have been prepared for recording injuries due to electric shock and those due to roentgen rays.

Medical Associations to Advise on Care of Disabled Ex-Soldiers.—The Senate Committee, headed by Senator Sutherland, investigating agencies dealing with care, treatment and hospitalization of former service men, has invited the American Medical Association, the Anti-Tuberculosis Association and the Association of Medical Hygiene, to

appoint committees to assist in the solution of the various questions relating to hospitalization and make reports to the committee. The committee has also decided to accept the services of Myron Adams of Chicago and Dr. Thomas W. Salmon of New York, as assistants to Col. Cornelius W. Wickersham, who is acting as adviser. Mr. Adams recently conducted an investigation at the hospital at Fort Sheridan, Ill., and will examine into the numerous individual complaints reaching the committee. Dr. Salmon, who is a member of the American Legion committee on hospitalization and vocational education and an expert in the treatment of mental diseases, will be assigned the task of making an examination of conditions in various hospitals.

Sheppard-Towner Bill Passes Senate.—The Sheppard-Towner Bill for the protection of maternity and infancy was passed by the Senate, July 22. As has been heretofore stated in THE JOURNAL, the bill provides for cooperation between the federal government and the states and authorizes the expenditure of $1,480,000 in establishing centers of information on the subject of infant hygiene and maternity. The bill is declared by its proponents to be a large humanitarian step and by its foes to be paternalistic and an unwarranted expense to the federal government which will increase from year to year. The bill passed the Senate at the last session but failed in the House of Representatives. Extended hearings have been held in the House Committee on Interstate Commerce relative to the merits of this bill during the past two weeks, and several physicians have given their views to the committee. Those appearing before the House Committee were:

FOR THE BILL

Hon. H. M. Towner, House of Representatives. Dr. S. Josephine Baker, Director, Bureau of Child Hygiene, Department of Health, N. Y., Dr. Philip Van Ingen, Clinical Professor, Diseases of Children, College of Physicians and Surgeons, New York. Dr. Ellen Potter, Director of Division of Hygiene, Department of Health, Harrisburg, Pa. Dr. John A. Ryan, Director of one Department of the National Catholic Welfare University, Washington, D. C. Mr. Edward McGrady, National Legislative Representative, National Federation of Labor, Washington, D. C. Dr. John A. Foote, Professor Diseases of Children, Georgetown University, Washington, D. C. Maj.-Gen. Charles E. Sawyer.

AGAINST THE BILL

Mrs. Albert T. Leatherbee, Massachusetts Anti-Suffrage Association, Boston. Dr. Charles F. Humiston, President, Illinois State Medical Society, Chicago. Dr. George W. Kosmak, Representing American Gynecological Society, New York. Mr. H. B. Anderson, Representing the Citizens' Medical Reference Bureau, New York. Dr. A. H. Quessy, Fitchburg, Mass. Dr. Charles E. Mongan, Representing Somerville Medical Society, Somerville, Mass.

LATIN AMERICA

Trinidad Requests Chaulmoogra Oil.—The state department has received a request from the surgeon-general of the Trinidad government for a quantity of the chaulmoogra oil preparation used by the U. S. Public Health Service in the treatment of leprosy. The request came through the American consul at Trinidad and also asked for information on the methods of administering the chaulmoogra oil treatment. The request was referred to the treasury department and the state department was advised that the Surgeon-General of the U. S. P. H. S. will arrange to have oil sufficient for 500 treatments sent to Trinidad together with information for its use.

Organization of the Profession in Uruguay.—The Sindicato Médico del Uruguay, recently organized to promote the material interests of the profession, ethics, and the welfare generally of the profession and of the public is already busily at work. The officers of the consejo arbitral are Drs. A. Turenne, M. Quintela, A. Vidal y Fuentes, E. Regules, L. Morquio, A. Lussich and J. de Salterain. As the *Revista Médica del Uruguay* remarks, "This list of names needs no commentary." An official bulletin is to be issued. Our exchange states that by the efforts of the Sindicato the doors of the daily press of Montevideo have been closed to the advertisements of persons illegally treating the sick. These persons have now transferred their advertisements to the country papers, but the Sindicato is on their tracks, and has inserted a notice in a daily at Salto asking all confrères everywhere to send in any advertisements of quacks they may come across. The national public health service has awakened to the evils of illegal practice of medicine, and has commissioned Drs. Bastos, Mainginou and Giribaldo to draw up a bill to regulate the practice of medicine, to be presented to the national legislature. The Sindicato Médico hails this step as promising great progress for the public health in general if the bill becomes a law.

FOREIGN

Radium Found in the Congo.—The *Scalpel* of Brussels relates that rumors have been current for a year that minerals rich in radium had been found in the Congo, and the Société de Géologie de Bruxelles now announces this to be a fact. Specimens of the minerals found at Katanga have been sold in London by a returning Belgian colonist.

Personal.—The graduating classes at the University of Palermo presented a souvenir gold medal to the professor of surgery and the professor of internal medicine, Tricomi and Giuffré.——A French society "for encouragement *du bien*," recently awarded a civic crown to the Institut Pasteur at Paris, and presented it to Dr. Roux as the representative of the institute.

Association for Research on the Treatment of Nervous and Mental Diseases.—As already mentioned, June 4, the most prominent neurologists and psychiatrists of the Netherlands have started a movement for more thorough study of treatment of nervous and mental diseases now that the progress of medicine has revealed the causes of many of them. They are appealing for financial support, offering membership in the Association for Research on the Treatment of Nervous and Mental Diseases for 10 florins a year or a single sum of 250 florins, or associate membership for 5 florins a year or for life for 100 florins. The secretary is Dr. B. Brouwer, Koninginnenweg 170, Amsterdam. Dr. Ariens Kappers, Amsterdam, is the president, and the appeal is signed by ten others, including Dr. W. Storm van Leeuwen and eight professors of nervous and mental disease, from Wertheim Salomonson of Amsterdam to Winkler of Utrecht.

The Congress Week at Strasbourg.—The week including Oct. 3 to 5, 1921, is to witness at Strasbourg the meeting of the Twenty-Fifth French Congress of Medicine, the Thirtieth French Surgical Congress, the third annual meeting of the Société d'Orthopédie and the Twenty-First French Urology Congress. The *Presse Médicale* for July 6 has a special supplement devoted to Strasbourg and the data in regard to these gatherings. The medical and surgical associations hold a common session the first day to discuss antianaphylaxis as presented by Widal in addition to reports on the heart, lungs and digestive tract. The main topics for discussion at the surgical congress are traumatic epilepsy, vaccine therapy in joint disease, and remote results of treatment of mammary cancer. The orthopedists are to discuss arthrodesis of the foot, ankylosis of the knee and nonoperative treatment of congenital luxation of the hip joint, and the urologists, anesthesia in the *urinaires*.

The American Nurses Memorial in France.—The laying of the cornerstone of this memorial, on French soil, at Bagatelle, a suburb of Bordeaux, was mentioned briefly on page 294. It is to be a model home for the nurses of the Florence Nightingale Training School for Nurses at Bordeaux. Our French exchanges comment appreciatively on it and give considerable space to the ceremony. The *Journal de Médecine de Bordeaux* gives illustrations and the long list of American and French notabilities present, Admiral Magruder and the staff of a gunboat in the harbor, the French government, the city, the navy, etc., being represented by special delegates. A French and an American military band assisted in the ceremonies, and the bugles gave the *Salut suprème*. The memorial is dedicated to the 284 American nurses that fell on the field of honor. Our exchange quotes the final dedication of the message from Miss Clara D. Noyes, president of the American Nurses Association, saying it should be placed over the door of the school. It is quoted as follows: "En souvenir de nos camarades tombées au champ d'honneur, nous, gardes-malades des Etats-Unis d'Amérique, dédions ce monument commémoratif—l'Ecole Florence Nightingale, destinée à élever le niveau de l'éducation des gardes-malades—à la France, à l'humanité." The money was collected by the efforts of the three organizations of nurses in the United States. The land was presented to the Protestant Hospital for the purpose by Mlle. Elisabeth Bosc.

Deaths in Other Countries

The *Wiener klinische Wochenschrift* brings word of the death of Dr. **Otto Zuckerkandl**, professor of urologic surgery at Vienna. His "Atlas and Epitome of Operative Surgery" is a familiar textbook, and he is one of the group of six urologists that publish the *Zeitschrift für urologische Chirurgie*, now in its sixth year as the continuation of the *Folia Urologica*.——The death is also reported of Dr. **von Schjerning**, surgeon-general of the medical department of the German army, aged 68, a leading figure for many years in military and medical gatherings, and writer on public health

matters from the military standpoint.——Dr. **A. Chervin,** director of the Institute for Speech Defects, at Paris; he died while on a mission to Spain.——Dr. **J. L. Martin,** honorary inspector-general of the services d'hygiène of the city of Paris, and for many years the editor of the *Bulletin de l'Académie de Médecine* although he was not a member of the académie.——Dr. **Rouby,** senator from la Corrèze and Dr. **G. Chapuis,** senator from Meurthe, France.——Dr. **Secheyron,** a leading surgeon of Toulouse.

Government Services

Medal Awarded Lieutenant-Colonel Gilchrist

The distinguished service medal has been awarded to Lieut.-Col. Harry L. Gilchrist, Medical Corps, at present a medical officer in the office of the chief of chemical warfare service, for exceptionally meritorious and distinguished service while colonel of the Medical Corps, serving as chief of the delousing and bathing services of the American Expeditionary Forces. By superior administration and efficiency he contributed materially to the success achieved by the Army at the ports of Brest, Bordeaux and St. Nazaire, in the return of the American Expeditionary Forces to the United States. Lieutenant-Colonel Gilchrist delivered a series of lectures during the week ending July 16, on the results of chemical warfare on personnel, from a medical officer's standpoint, before the students of the Medical Field Service School at Carlisle, Pa.

Medical Reserve Officers and Care of Disabled

Information has been given out at the office of the Surgeon-General of the Army that no medical reserve officers will be called into active service in the near future to take care of War Risk Insurance Bureau patients. The forty-four reserve officers already on duty with the regular medical officers are sufficient to supply the present demand. An allotment of funds from the War Risk Insurance Bureau to the War Department has been made, however, and the money is to be used for the pay of officers and nurses that may later be called into active service. Unless, however, the hospitals under the control of the War Department are called upon to care and treat additional former service patients, no change will be made in the present situation as regards medical reserve officers.

Improvements at Dawson Springs Sanatorium

Awards of contract for the construction of thirteen additional buildings of fireproof material at the Dawson Springs Sanatorium, Dawson Springs, Ky., have been made by the Secretary of the Treasury. Algernon Blair of Montgomery, Ala., received a contract for $800,000 and the Forbes Manufacturing Company, Hopkinsville, Ky., was given a contract for $196,225. The sanatorium at Dawson Springs is expected to cost the government over $2,100,000. It will be a complete tuberculosis sanatorium with accommodations for 500 patients. Completion is guaranteed by the contractors within six monhts.

Retirement of Colonel Wadhams

The War Department has placed Lieut.-Col. Sanford H. Wadhams, M. C., U. S. Army, on the retired list on account of disability incident to the service. Colonel Wadhams recently has been stationed at the general staff college, Washington Barracks. He is from Connecticut and entered the Army as an assistant surgeon in October, 1900. During the World War he served as a colonel, Medical Corps, of the National Army, and was awarded a distinquished service medal for exceptionally meritorious services.

Transfer of Training School

The Naval Hospital Corps Training School, formerly conducted at Great Lakes, Ill., has been transferred and merged with the school which has been maintained at the Naval Training Station, San Francisco. About 300 men were transferred with the school. Capt. Charles St. J. Butler has been transferred from the Naval Hospital, Great Lakes, to command the Navy Medical School at Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 4, 1921.

The Protection of Roentgen-Ray Workers

As stated in THE JOURNAL, April 21, p. 1181, on the death from aplastic anemia of Dr. Ironsides Bruce, roentgenologist to Charing Cross Hospital, a committee was formed to consider the dangers of roentgen-ray workers and how to avoid them. This consisted of Sir Henry Rolleston, chairman; Sir Archibald Reid, St. Thomas' Hospital; Dr. Knox; Dr. Horrison Orton, St. Mary's Hospital; Dr. Gilbert Scott, London Hospital; Dr. Mottram, Radium Institute; Dr. Kaye, National Physical Laboratory, and Mr. Cuthbert Andrewes. The honorary secretaries are Dr. Stanley Melville, St. George's Hospital, and Professor Russ, Middlesex Hospital. The report has now been issued. It lays stress on the danger of overexposure to roentgen rays and radium, but states that these can be avoided by efficient protection and suitable working conditions. The effects to be guarded against so far as known at present are: (1) visible injuries to the superficial tissues (skin, etc.) which may result in permanent damage, and (2) derangements of internal organs and changes in the blood. These are especially important, as their early manifestation is often unrecognized. As general precautions, it is recommended that not more than seven working hours a day should be undertaken. Sunday and two half days off duty each week should be spent, as far as possible, outdoors. An annual holiday of one month or two separate fortnights is also advised. Sisters and nurses employed as whole-time workers in roentgen-ray and radium departments should not be called on for any other hospital service. A primary precaution in all roentgen-ray work is to surround the roentgen-ray bulb as completely as possible with adequate protective material, except for an aperture as small as possible for the work in hand. In screen examinations, as in examinations for broken bones, it is advised that an equivalent of 2 mm. of lead should surround the bulb. The fluorescent screen should be fitted with lead glass equivalent to not less than 1 mm. of lead. Practical difficulties militate against the recommendation of a greater degree of protection. Between the operator and the roentgen-ray box there should be a traveling screen of material equivalent to not less than 2 mm. of lead, and protective gloves of lead rubber, lined with leather, ought to be worn. Even so, all manipulations should be reduced to a minimum. A minimum output of radiation should be used with the bulb set as far from the screen as in consistent with efficiency, and screen work should be as expeditious as possible.

Similar precautions are suggested for roentgenographic examinations. In cases in which cubicles are used for the work, these should be well lighted and ventilated, preferably by means of an exhaust electric fan in an outside wall or ventilation shaft. The controls of the roentgen-ray apparatus should be outside the cubicle. The walls of the cubicle should be of material equivalent to not less than 2 mm. of lead, and its windows to lead glass of equivalent thickness. In the case of apparatus to be used for deep therapy, giving voltages greater than 100,000, small cubicles are not recommended. A large, lofty, well ventilated and lighted room is to be provided. The bulb should have not less than 3 mm. of lead surrounding it, and a separate enclosure is required for the operator, situated as far as possible from the roentgen-ray bulb. All controls should be inside this enclosure, the walls and windows of which ought to be of material equivalent to not less than 3 mm. of lead. These recom-

mendations hold good also for roentgen rays used for industrial and research purposes. The floors of the rooms should be of wood, cork or rubber, and existing concrete floors should be recovered with one or another of these materials. Stout metal rods should replace wires. All metal parts of the apparatus and room should be efficiently earthed. Ventilation is regarded as of great importance. The roentgen-ray room should not be below ground level. Artificial ventilation is necessary in most instances, for, with very high potentials, so-called coronal discharges are difficult to avoid, and these produce ozone, and nitrous fumes, both of which are prejudicial to the operator. Dark rooms should be capable of being opened up to sunshine and fresh air when not in use. The walls and ceilings of these rooms "are best painted some more cheerful hue than black."

Radium in quantities up to 1 grain, in whatever form, should always be handled with forceps and not with fingers. It should be carried from place to place in long-handled boxes lined on all sides with 1 cm. of lead. Manipulations should be as rapid as possible. Radium should be stored in an enclosure, the wall thickness of which should be equivalent to not less than 8 cm. of lead. In the preparation of radium emanations, rubber gloves should be worn and care taken against the escape of the emanations. The room ought to have an exhaust electric fan. In view of the varying susceptibilities of workers, blood tests should be carried out every three months, so that any tendency to anemia may be noted.

A New Roentgen-Ray Apparatus

The West London Hospital announces the possession of a new roentgen-ray apparatus, the design of a Bavarian roentgenologist and the only one in England which makes use of rays of a wave length not hitherto employed. The current is of a voltage greater than 200,000. It is expected that with this new apparatus double the number of cures of cancer possible in the past will be obtained. The tube gives the highest penetration yet achieved.

Anthrax and Disinfection of Horsehair

The departmental committee which has been inquiring into the disinfection of horsehair has reported to the home office that there is danger of anthrax infection from Russian, Chinese, Siberian and Asiatic horsehair generally. Large quantities of drawn hair (partly manufactured hair) are now imported from China, and consignments of shaving brushes made from infected hair are arriving in this country. The satisfactory disinfection of such prepared hair and of shaving brushes is impracticable, while the danger to users is great. Only two courses are possible: (1) total prohibition of the import into this country of any manufactured or partly manufactured hair, and of goods composed or partly composed of foreign horsehair or goat hair; or (2) the establishment in the countries from which such goods are imported, of disinfecting stations under the control of a central authority invested with power to enforce disinfection of the raw hair before manufacture. This is a matter of international concern. Materials similar to those which cause anthrax in this country are, however, used in other countries, and it is impossible to believe that the people of this country alone are susceptible to the disease. The committee has unofficial information of outbreaks of anthrax among human beings in China, India, Constantinople and elsewhere. The committee states that the process devised for disinfection of wool is suitable as a method for the compulsory disinfection of horsehair.

Professional Secrecy

The case of a physician who attended a patient at a venereal disease clinic and was compelled, by order of the judge, to give evidence in a court, thus violating both the general obligation of professional secrecy and the regulations of the clinic, was reported in a previous letter. The matter has come before the council of the British Medical Association, which has passed a resolution that it "has learned with great regret of the position created by the recent decision of a judge that the medical officer of a venereal disease clinic must give evidence in a civil case as to the medical condition of a patient under his care, thus violating the confidence between physician and patient and the direct undertaking given by the Local Government Board that all proceedings at such clinics should be absolutely secret and confidential." In drawing the attention of the ministry of health to these facts the council urged that such legislative steps be taken as would render such an occurrence impossible in the future. It has also asked the minister of health to receive a deputation to discuss the whole question.

Filariasis Expedition to British Guiana

An expedition sent to British Guiana by the London School of Tropical Medicine to investigate filariasis has been working there since the middle of April. Prof. R. T. Leiper, the well-known helminthologist, director of the helminthology department of the London School of Tropical Medicine, is in charge of the expedition, and the members include native physicians of the Egyptian government service. As there is evidence that filariasis is a house infection, the expedition has engaged in a house-to-house visitation in Demerara, the capital of British Guiana. A kind of mosquito census is being taken to ascertain the proportion infected. Another object of the expedition is to ascertain what species act as host to the filariae. It was originally arranged that the expedition should last six months. At the suggestion of Sir Patrick Manson, it is proposed to visit certain West Indian islands, taking one such as Barbados, in which the attack rate is high, and another, such as Grenada, in which it is low. By comparing the circumstances in the two islands, it is hoped to throw light on the conditions that favor the disease.

The Color Bar

Though it would be going too far to say that racial prejudices do not exist in England, there certainly is no color bar. However, in South Africa, the Trained Nurses' Association has decided to exclude a colored woman who is trained and holds a certificate qualifying her for membership, and to amend its constitution so as definitely to exclude colored and native nurses. The *Hospital* (a nurses' journal published in London) "regrets to learn this decision."

Art as a Solace in the Ward

It seems incongruous, perhaps, that the Arts League of Service, which stands for modern movements in art, should give its entertainment in a hospital ward to patients who, being classed as incurable, are out of the current of life's progress. The action is, however, quite in accordance with the aim of the league—to "bring art into everyday life"—and this could hardly be better carried out than in solacing sufferers. Believing that art is the joy of life, the Arts League of Service has taken it to the cancer ward of the Middlesex Hospital, to cheer the clouded lives of its incurable inmates. Science has done all it can do for them. Art steps in and takes them away for a while from their hopeless groove to a happy world of color and sweet sound and joyous movement. It was interesting to hear from their own lips how much they liked the fine old folk songs and dainty Elizabethan ditties sung and acted in picturesque costumes (designed by artists), and the graceful Greek expressionist dancing. "It was so happy and so restful, just what we could enjoy" was the verdict. The entertainment was one

of a weekly series arranged by the Dowager Lady Brassey for the patients in the Middlesex Hospital. Its success suggests new possibilities for art, whose place in the life of the nation is now being greatly discussed. Why should it not take a definite part in the work of the hospital?

PARIS

(From Our Regular Correspondent)

June 24, 1921.

Death of Prof. Jean Fabre

Dr. Jean Fabre, professor of clinical obstetrics at the school of medicine of the University of Lyons, died recently in Paris at the age of 55. Fabre was born in Lyons in 1866; was appointed obstetric surgeon to the hospitals in 1901, and three years later succeeded Fochier to the chair of clinical obstetrics. We are indebted to him for his Atlas of Normal Anatomy and the Pathology of Pregnancy, a compendium on obstetrics; also for a series of works on the innervation of the uterus, albuminuria in pregnancy, etc. He was a supporter of the institution in Lyons called the Gouttes de lait and also devoted his time and energy to consultations for nurslings in the tenement quarters of his native city. Since 1919 Fabre had been a corresponding member of the Academy of Medicine.

Mental Derangement and Divorce

Two deputies, Georges Simond and André Tardieu, have presented the draft of a law giving certain courts authority to pronounce the dissolution of marriage contracts in cases of mental derangement in the husband or wife. They mention the fact that insanity constituted a cause for divorce in the law of 1792. They believe that it is a benefit to society to dissolve such unions as are inevitably destined to remain unfruitful, and thus to make possible new marriages from which good results may be anticipated as regards the repeopling of France. However, since divorce suggests the idea of some offense having been committed, the dissolution of marriage and not divorce is entailed by mental derangement of husband or wife, for the reason that one or the other is incapable of performing the obligations of marriage, which is a contract. The dissolution of the marriage contract should not, however, occur unless it is an established fact that the spouse afflicted with mental derangement is incurable. That is why serious justification must be required of any one who demands of a court the dissolution of marriage: an internment of the patient for more than three consecutive years in a hospital for the insane, certified by the superintendent of the hospital for insane, and a certificate of the medical director stating that mental derangement seems incurable. On the other hand, the proposed bill includes a number of paragraphs inserted with a view to safe-guarding the interests of the insane person and to determining the manner in which the dissolution of the marriage contract shall affect the disposition of the property of the husband and wife concerned.

Social Hygiene in the Liberated Regions

Various features of social hygiene (female inspectors, visiting nurses, dispensaries, vacation colonies) have been organized in nine departments by the minister of liberated regions. On account of a lack of financial appropriations, these services are threatened with failure. The Commission d'hygiène sociale de la ligue civique, of which Dr. Roux, director of the Pasteur Institute, is president, expresses the wish that, instead of being abolished, these services may be strengthened and their usefulness extended by the diversion to their needs of the $2,000,000 donation made by an American citizen, Mr. Frank H. Bull. The Ligue civique hopes that, instead of a new society being formed to handle these funds, an autonomous bureau of social hygiene may be organized having judicial authority to accept this donation and others of a similar nature that are sure to be received from France and foreign countries, and controlling also the disposition of subsidies granted by the central government, the departments and the communes. Such a bureau would insure the continuation of services that are indispensable in order to repair the damage done to the health of the inhabitants of the liberated regions, and to offset the injuries inflicted on the children who have been the victims of the consequences of a long foreign occupation.

BELGIUM

(From Our Regular Correspondent)

LIÉGE, June 22, 1921.

Justice and Legal Medicine

The sixth congress of Médecine légale de langue française was held, May 23-26, at Liége and Brussels, under the presidency of Messieurs Héger-Gilbert and Stockis. As one important result accomplished, attention was called to the important influence that the activities of medicolegal experts and criminologists have had on legislators and legislation. In fact, even the magistrates present at this congress acknowledged the incompleteness of existing laws, which recognize only two classes of delinquents, the normal and the insane. Holvoet, the royal solicitor, chose for the subject of his address: The Criminal Code in Relation to Abnormal Subjects. He proposed adding three new articles to the criminal code: one dealing with delinquents under 25 years of age, whom a judge would be permitted to turn over to the care of a governmental prison-school; the other two articles dealing with abnormal subjects who constitute a social danger and who may be placed in a special establishment until such time as there shall be reason to believe that their criminal tendencies have been overcome. This report, which is well worked out, proposes the introduction of the indeterminate sentence for abnormal subjects.

Prisons and Anthropology

At the same congress, Dr. Vervaeck presented an interesting report on the work of the superior council of prisons and the anthropologic service, in which he expressed the conviction that the individualization of penalties would be established sooner or later, and that, as he and his co-worker Dr. Héger-Gilbert have proposed, the organization of prison labor would, in the near future, come to be regarded as the best means of bringing about a normal regeneration of delinquents. By a process of selective examination, which could be carried out in the psychiatric annex, the bad elements incapable of adaptation to social conditions would be separated from those more susceptible of regeneration. The usefulness of psychiatric annexes was unanimously accepted. In these "prison retreats" the psychiatrist will be able to ferret out the abnormal subject and to give him the needed treatment. Prisons for abnormal subjects will doubtless furnish a solution of the vexatious problem of lessened responsibility due to abnormal mental states.

New Law Concerning Abnormal Children

The recent enactment of a law having for its purpose the suppression of the abuse of home detention of abnormal children is worthy of note. All abnormal children who are capable of being educated but who are not adapted for the special courses of instruction for backward children organized by the communes will be admitted to special schools for the period of their education, all the expense of which will be borne by the government. To prevent abuses arising from this extension of the privilege of the use of public funds, the legislature has established in each province an

administrative board of supervision and control composed of psychiatrists and pedagogic specialists. It will be the duty of this board of supervision to inquire: (1) whether home detention is necessary; (2) whether detention at home is feasible, that is, whether the family is able to give the subnormal child necessary care and supervision, and (3) whether detention as actually carried out is effective; that is, whether he is properly cared for and watched over.

Psychiatric Clinics in Universities

In spite of repeated demands presented more particularly at the bar of the Société de médecine mentale, not a single suitable psychiatric clinic has been established at any of our universities. A committee on organization has been created for the purpose of promoting the establishment of an intercommunal psychiatric clinic in Brussels. We may hope that the labors of this committee will bear fruit, owing to the influence and the organizing ability of Prof. A. Ley. Unfortunately, there is no prospect as yet of similar institutions being established in the state universities.

International League Against Tuberculosis

By virtue of a resolution passed by the Belgian National League Against Tuberculosis, a prize of 500 francs will be offered each year for the best work submitted on the subject of tuberculosis.

PRAGUE

(From Our Regular Correspondent)

July 8, 1921.

Strike of Health Insurance Physicians

The strike of the medical officers of the insurance associations is still progressing. The central organization of Czechoslovak physicians has declared that the strike is complete throughout the whole republic. They state that the physicians are well pleased because they are not so overburdened as they used to be, and that they make more money. The associations have offered an increase of 50 per cent. in fees beginning July 1. It seems that the physicians would be satisfied with this increase in case it should be granted to them beginning Jan. 1, 1921. It is probable that the strike must be settled soon in some way or another, because the special funds for strike purposes of the associations are exhausted.

Child Welfare Clinics

The American Red Cross, through its representative, Dr. H. O. Eversole of Los Angeles, is organizing medical and social child welfare clinics in Czechoslovakia. A central committee including the representatives of both the ministries of public health and social welfare and all private organizations working in the field of child welfare has been created. This committee will advise Dr. Eversole in carrying out his program and will finally take over the work. Twenty-two child welfare centers in each of the governmental districts are being considered. The center will be highly organized, including a laboratory with a physician in charge and social workers and public health nurses attached. The centers will be operated for the first few months by Americans, who will train local workers to take them over later on. Dr. H. O. Eversole has spent two and a half years with the Czechoslovakian legions in Siberia as the representative of the American Red Cross and has many good friends among the leaders of the new republic.

Conference on Venereal Diseases

In the fall of 1921 a mid-European regional conference on venereal diseases will be held in Prague. It will be one of the series of regional conferences which are being organized through the League of Red Cross Societies all over the world and of which the Pan-American conference in Washington, D. C., last fall was the first. Poland, Austria, Roumania, Jugoslavia, Greece and probably Hungary will send representatives to Prague, where the Czechoslovak Red Cross will be the host of the delegates. It will be the first international after-war congress in which all the nations of this war-stricken corner of the world will take part.

Quinin as a Prophylactic Against Puerperal Infection

In the *Journal* of Czechic physicians, Dr. Chmelar publishes a summary of his experience in rural practice during a period of twelve years. During that time he attended 351 confinements, some of them under conditions conducive to sepsis. Among all these cases no serious puerperal infection developed when he gave 4 or 5 grains of quinin in the first period of labor, and for the five following days the same dose two or three times a day. He believes that this treatment represents a very reliable prophylactic measure against puerperal infection, and recommends it especially for country practice, in which the physician has to work sometimes under very difficult conditions.

BERLIN

(From Our Regular Correspondent)

June 12, 1921.

Treatment of Diabetes

At the recent Wiesbaden Congress of Internal Medicine a very interesting discussion occurred on the treatment of diabetes, during which some of the more important experiences gained in the war came up for consideration. The fact that the two prominent diabetes investigators, von Noorden of Frankfort-on-the-Main and Minkowski of Breslau, presented the opening papers on the subject lent particular interest to the discussion. In the opinion of von Noorden, all diabetics who have never received systematic treatment or who have been treated by half-way measures should be subjected to a spare diet, after a period of which they may be gradually accustomed to a more liberal permanent diet, which, however, should be interrupted by short periods of a highly restricted diet. The period of strict diet takes the place of the yearly trip to Carlsbad or other resorts. The strict, carbohydrate-free diet is now never employed as a permanent diet. It should, however, still be used as a form of conservation treatment, but with further limitation of the protein content. This feature finds its expression on the so-called vegetable days. Von Noorden thinks that many investigators have too great a fear of an excessive fat intake, especially when the other substances are likewise present in the food. Von Noorden distinguishes between a strict diet that is rich in protein and one that is poor in protein. The strict diet that is poor in protein should not be recommended for more than five or six days at a time. To prevent injury to the patient, additional protein will then be necessary; but the protein may be increased only in the absence of carbohydrates. Especially in mild cases, strict diet is to be recommended. Once a week a carbohydrate day (preferably fruit) can be introduced, which should be followed by a vegetable day. In this manner we shall prevent protein metabolism from becoming excessive. In the more severe cases, oatmeal days or something of that nature should be interposed. In dealing with emaciated diabetics with cardiovascular symptoms, the change from a strict diet poor in protein to a strict but protein-rich diet may have a very salutary effect and may even save a life. In all cases characterized by acidosis, an interposition of fast days ("Sundays for the organs," as he terms them) is desirable. The Allen procedure was discussed and the opinion seemed to be that it had brought us nothing essentially new. It is important, during the fast days, to keep the patient in bed with nothing to

occupy his mind. There are some cases in which the final outcome depends to a great extent on finding a means of checking the overactivity of the sugar-forming mechanism. In such cases a strict application of Allen's procedure with its extremely limited diet (4 calories per kilogram of body weight) is advisable. Kolisch proposes and defends the following hypotheses: (1) Carbohydrate tolerance increases in proportion as the protein content decreases; (2) animal protein is particularly harmful, and (3) the diabetic cannot handle as many calories of food as a normal person. Though it may not as yet have been proved, it is at least correct that all overfeeding is injurious. The various carbohydrate "cures" that are based on von Noorden's oatmeal days were discussed. The use of burnt sugar (caramel) denotes progress. Falta's "flour-fruit cure" has certain advantages in connection with prolonged carbohydrate "cures." We must use the old regimen in connection with these "cures," and vegetable days must be introduced before and after. The effect of carbohydrate days is not the same on all diabetics. It will be determined to a certain extent by the relative amount of protein in the diet. The interrelationship between the protein and the carbohydrates in the diet of the diabetic must be the subject for further study. Also, with reference to the permanent diet, the same principle holds true, that an excess of protein in the diet has a bad effect on carbohydrate tolerance.

The advocacy of a permanent diet worked out on the basis of averages has been clearly shown to be unwarranted and must be replaced by a regimen that takes account of needed changes in the diet. Von Noorden is inclined to doubt the wisdom of continued protein-poor diet, and thinks that the strength of the patient and his potential energy are manifestly increased by the introduction of certain days with a strict but protein-rich diet. This does not hold if coma threatens. Finally, the conditions under which carbohydrate "cures" should be employed were discussed. Von Noorden thinks that carbohydrate days are needed in all except very light cases. The condition of most diabetics has a tendency to become worse, and we can be fairly content if we can preserve the status quo. Even in severe cases the disease can sometimes be brought to a standstill for a time by the use of Falta's procedure. However, patients who are doomed to die within a very short time should not be tormented by a strict diet. A slight acidosis, in von Noorden's opinion, is not always of such bad import, and patients gradually get used to it. In such cases von Noorden introduces variations by prescribing days with ordinary strict diet; then days with an increase of carbohydrates but with only a small quantity of protein; then vegetable days and carbohydrate days. Unless the nature of the acidosis is such as to contraindicate it, a day of strict but protein-rich diet should be interposed. As a rule, the diet remains protein-poor. In this manner it is often possible to attain a satisfactory condition of metabolism. Von Noorden disapproves of using large quantities of sodium bicarbonate.

In his discussion of the subject, Minkowski emphasized the fact that, in spite of his different theoretical point of view, he did not differ materially from von Noorden in the practical aspects of the question. He is of the opinion that it is not so much new facts as it is new terminology that creates the impression that there has been an upheaval in the field of diabetes therapy. He would not attempt to deny that in certain cases good results can be secured with carbohydrate "cures" and fasting "cures." But the problems and the goals to be reached by treatment are not essentially different from what they have been: the abolition of hyperglycemia and the increase of tolerance for carbohydrates. That, along with the limitation of the carbohydrate intake, a reduction of the protein intake, and also of the total calory content, should be brought about, has been a teaching of Naunyn and his followers for some time past. The more recent observations have only shown that, in some instances, we can go much farther with the reduction of the protein intake and the diminution of the caloric value of the food than we formerly thought was possible, and that, in this manner, a lasting improvement in the whole situation as regards metabolism can be effected in certain cases. In principle, these facts do not change anything with respect to the aim of conservation therapy, so long as we do not go beyond a certain limit in adjusting the amount of carbohydrates that may be safely added when the protein intake is restricted. That is certainly the case as regards the Falta "flour-fruit cure," for which the term "carbohydrate cure" is misleading since, in reality, a marked restriction of the protein intake is the principal feature. Carbohydrate "cures" in which neither the injurious effect of hyperglycemia nor the conservation of the damaged function is considered are reprehensible.

Dietaries which, through restriction of the protein intake, make possible the ingestion of a certain quantity of carbohydrates are principally needed in severe cases with acidosis, in which the use of oatmeal has proved efficacious in that it prevents the formation of ketones in the urine. We do not need to ascribe a specific effect to the oatmeal in this connection. In moderate cases, by alternating between periods of protein-poor diet, with a certain amount of carbohydrates, and periods with carbohydrate-free and protein-rich diet, often more can be accomplished than by absolute and long continued withdrawal of carbohydrates. In the majority of mild cases, however, a restriction of the carbohydrate intake below the threshold of tolerance, together with the avoidance of an undue protein intake and adaptation of the total calory intake to the daily expenditure of energy, is to be preferred. The reduction of the protein intake must not go so far as to endanger the supply of protein in the body. Various forms of undernutrition, such as Allen's starvation treatment, constitute only an extension, although possibly, in some respects, an exaggeration, of the customary fast days. It is often surprising to find how easy it is to carry out the strict dietary recommended by Allen. The principal field of indication for this treatment is the precomatose stage in severe acidosis. There may be other cases in which it will occasionally be of advantage to begin a course of treatment with fast days if it is desired to secure promptly tangible results. However, undernutrition is fraught with danger, which can be avoided only by careful observation. Though recent departures from former therapeutic methods present nothing essentially new, they at least offer in their technical details some things that may be regarded as a reenforcement of our therapeutic armamentarium. They may prove to be of great value if they are used to afford greater opportunity for individualized treatment. Recent therapeutic observations have changed nothing with respect to the theoretical basis of the knowledge of diabetes. As formerly, we can still maintain that: 1. The disease that can be truly termed diabetes is attributable, in the main, to disturbances of pancreas function. Other organs concerned with carbohydrate metabolism affect only the intensity and the course of the glycosuria. 2. With respect to the functioning of the pancreas, we are concerned with the positive performance of the gland and not merely with a retarding mechanism or the arrest of sugar formation in the liver. Diabetes referable to the pancreas cannot be regarded simply as an unchecked glycosuria traceable to epinephrin. 3. The functioning of the pancreas is necessary for the normal utilization of carbohydrates by the organism. It is true there may be an abnormal increase in formation of sugar, but diabetic glycosuria is not explainable without disturbance of sugar metabolism.

Marriages

MICHAEL A. DAILEY, Major, M. C., U. S. Army, Marfa, Texas, to Miss Joeen Margaret O'Brien of Paris, Texas, June 25.

FRANCIS E. TIERNEY, Lieut., M. C., U. S. Navy, to Miss Alice E. Killfoile of Stockbridge, Mass., in New York, July 7.

WALTER J. PENNELL, Lieut., M. C., U. S. Navy, Washington, D. C., to Miss Mary E. Eliason, at Washington, July 6.

EUGENE HERBERT TOWNSEND, JR., La Crosse, Wis., to Miss Lillian Caroline Johnson of Canton, Minn., July 16.

CHARLES EDWARD LOCKE, JR., Manila, P. I., to Miss Jane Thompson of Pasadena, Calif., in Detroit, June 21.

FREDERICK PELHAM SUTHERLAND, Martins Ferry, Ohio, to Miss Anna Obrist of Portsmouth, Ohio, June 29.

E. LEAVENWORTH MCGILL, Petersburg, Va., to Miss Patty Radcliffe Fitts of Wilmington, N. C., June 28.

WILLIAM WIRT WADDELL, JR., Norton, Va., to Miss Barbara Belle Flock of Williamsport, Pa., June 14.

JOHN STUART HUME, Norfolk, Va., to Miss Isabel Hamilton Christian of Lexington, Va., June 4.

RICHARD HUGH WOOD, Richmond, Va., to Miss Maria Booth Robinson of King William, Va., June 18.

HENRY A. CHRISTIAN, Boston, to Miss Elizabeth Sears Seabury of Longwood, Mass., about July 3.

ALLEN TUPPER HAWTHORNE, Harrisonburg, Va., to Miss Dorothy Turner of Afton, Va., June 2.

QUINTUS HARPER BARNEY to Miss Nell Richard Files, both of Wardensville, W. Va., June 25.

CAMPBELL HARRIS to Miss Winifred Gertrude Gwynne, both of Richmond, Va., June 3.

GEORGE G. SNARR to Miss Reba Beard, both of Harrisonburg, Pa., June 29.

ROBERT MACKENZIE to Miss Ethel L. Sweet, both of Detroit, May 19.

Deaths

William J. Gallivan ⊕ Boston; Medical School of Harvard University, Boston, 1892; died, July 13, from heart disease, aged 56. Dr. Gallivan was director of the division of tuberculosis of the state department of public health; director of child hygiene department, 1911-1914, and health commissioner of Boston in 1915. He was the author of a bill establishing Rutland state sanatorium for treatment of tuberculosis; of a bill for the free distribution of antitoxin, and also of a bill for creating a board of registration in medicine. For nine years he served as member of the school board.

Harry L. Arnold ⊕ Omaha; College of Physicians and Surgeons, Chicago, 1897; also postgraduate work at universities in Vienna, London and Germany; served as medical examiner of draft board, M. C., U. S. Army, during the World War; visiting ophthalmologist to the Creighton University and St. Joseph's Hospital, Omaha; died, July 8, from heart disease, aged 51.

Richard Burton Robards, Harrodsburg, Ky.; Hospital College of Medicine University of Kentucky, Louisville, 1902; member of Kentucky State Medical Association; while on the way to sanatorium in Shelbyville, Ind., for treatment, he was found dead in bed at the Belvedere Hotel, Columbus, Ind., July 7, probably due to overdose of heroin, aged 45.

B. H. Rand, Golden, Texas; Memphis Hospital Medical College, Memphis, 1893; served as state penitentiary surgeon at Allen Farm, during Governor Hogg's administration; died, June 13, from acute indigestion complicating malarial infection.

John Jacob Defendorf, Ionia, Mich.; Detroit Homeopathic Medical College, Detroit, 1893; Civil War veteran; formerly attending surgeon at the Michigan Soldiers' Home, Grand Rapids, and local health officer; dropped dead, July 7, aged 71.

Archibald C. Fairbairn, Robbinsdale, Minn.; Medical Faculty Queen's University, Kingston, Ont., 1871; at one time chief surgeon, Northern Pacific Railroad; died, July 9, in the General Hospital, Minneapolis, from pneumonia, aged 78.

⊕ Indicates "Fellow" of the American Medical Association.

Ira Condict Whitehead, Philadelphia; Berkshire Medical College, Pittsfield, Mass., 1855; acting assistant surgeon in the Navy, 1861-1865, and again from 1875-1879; died, July 11, in the U. S. Naval Hospital, Philadelphia, aged 88.

George Wayland Dodge, Moravia, N. Y.; Eclectic Medical College of the city of New York, 1894; died, July 6, at Auburn City Hospital, N. Y., from internal injuries received when he fell from the porch of his home, aged 65.

William E. Kiely, Cincinnati; Medical College of Ohio, Cincinnati, 1877; member of Ohio State Medical Association; died, July 13, at the Good Samaritan Hospital, Cincinnati, from pneumonia, aged 71.

Joseph Henry Jansing, Cushing, Okla.; St. Louis College of Physicians and Surgeons, St. Louis, 1911; served as captain, M. C., U. S. Army, during the late war; died, July 10, in Oklahoma City, aged 37.

Christopher Dean Mowry, Aurora, Ill.; Rush Medical College, Chicago, 1876; practitioner in Aurora for forty years; died, July 6, in the St. Charles Hospital, Aurora, from liver trouble, aged 75.

Lucien Claude McElwee, St. Louis; Missouri Medical College, St. Louis, 1882; dean of the Homeopathic Medical College of Missouri; killed in a street car accident, July 3, aged 59.

Louis Braby Cunningham, Wampum, Pa.; University of Pennsylvania, Philadelphia, 1916; was instantly killed in a motor accident at Centre Point, W. Va., June 29, aged 29.

Phillip Erhard ⊕ Syracuse, N. Y.; Syracuse University, 1902; member of the staff, Hospital of the Good Shepherd, Syracuse; died, July 7, from pneumonia, aged 44.

John Francis McGowan, Pitkin, Colo.; Louisville Medical College, Ky., 1880; died in July, at Salida, Colo., from burns received when his cabin ignited, aged 63.

Samuel T. Satterthwaite, Hendersonville, N. C.; Bellevue Hospital College, New York, 1870; died, June 24, from gastro-enteritis, aged 71.

Frederick N. Beardslee, Manchester, N. H.; Boston University, 1899; died, July 8, at Rye, N. Y., from cerebral hemorrhage, aged 51.

Lyman B. Bluitt, East St. Louis, Ill.; Meharry Medical College, Nashville, Tenn., 1890; died, May 12, from cancer of the throat, aged 55.

Henri A. Blakemore, Gallotin, Tenn.; Vanderbilt University, Nashville, Tenn., 1880 and 1884; died, July 3, from senile cirrhosis, aged 80.

John Breckinridge Richardson, Louisville, Ky.; Jefferson Medical College, Philadelphia, 1865; died, July 3, from myocarditis, aged 69.

Argus B. Swisher ⊕ Marysville, Ohio; Miami Medical College, Cincinnati, 1882; died, May 24, from cancer of the bladder, aged 67.

Isaac H. Magill, Corning, Kan.; University Medical College, Kansas City, Mo., 1884; died, April 12, in Lawrence, Kan., aged 60.

Frank Brother Cone, San Francisco; Medical College of Ohio, Cincinnati, 1884; died, May 12, from anemia, aged 67.

John T. Allen ⊕ Brownsville, Tenn.; Bellevue Hospital Medical College, New York, 1880; died, May 9, aged 65.

Ferdinand N. Ware, Thomson, Ga.; University of Georgia, Augusta, 1888; died, June 20, from paralysis aged 64.

A. Hampton Little, Milwaukee; Milwaukee Medical College, 1901; died, June 27, from tuberculosis, aged 42.

Harlow B. Drake ⊕ Detroit; Hahnemann Medical College of Philadelphia, 1873; died, July 5, aged 73.

Charles O. Smith, Atlanta, Ga.; Atlanta Medical College, 1892; died suddenly, June 30, aged 55.

Wilmer Orla Lewis, Clay Center, Neb.; University of Nebraska, Omaha, 1920; died, June 20.

Robert Lee Guthrie, Denver; University of Colorado, Denver, 1919; died, July 2, aged 27.

Henry B. Blake, Cottonwood, Idaho (license, Idaho, 1899); died, July 2, aged 79.

Thomas L. Luna, Floyd, Miss. (license, Mississippi, 1882); died, July 2, aged 66.

Correction.—In THE JOURNAL, May 14, appeared an obituary notice relative to Dr. S. Ringolsky, San Francisco. We are informed by Dr. Ringolsky that the announcement was an error. The information was sent to THE JOURNAL by the *California State Journal of Medicine* and was based on an erroneous press clipping.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Nerv-Mintz.—The Earle Chemical Co., Wheeling, W. Va., in July, 1920, consigned a quantity of this product which the federal authorities declared misbranded. When analyzed by the federal chemists the preparation was found to consist of tablets containing essentially sabal, nux vomica, zinc phosphid, aloin and capsicum (red pepper). Nerv-Mintz was sold under such claims as:

"A nerve strengthener . . . soothe and quiet the nerves . . . used for the relief of Nervousness, Loss of Vigor, Energy and Ambition —Lack of Confidence, Sleeplessness, Trembling Nervelessness, Shifty Gait, Shattered Nerves, Exhausted or Weakened Vitality, Mental Depression, Numbness, Weakening Habits . . . and All Overworked and Unstrung Nerves Induced by Fast Living and Other Excesses."

". . . exceptionally efficient in the treatment of Nervousness, Loss of Vigor, Energy and Ambition, Lack of Confidence, Sleeplessness, Shifty Gait, Shattered Nerves, Weakened or Exhausted Vitality, Mental or Physical Depression, Weakening Habits."

"Nerv-Mintz prove most wonderful rejuvenators, restoring the lost vitality you perhaps had thought was gone forever."

These claims, and others similar to them, were declared false and fraudulent and applied with a knowledge of their falsity for the purpose of defrauding purchasers. In September, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8859; issued May 18, 1921.*]

Penslar Sancop Pearls.—A quantity of this preparation alleged to have been shipped in December, 1918, and January and March, 1919, by the Peninsular Chemical Company, Detroit, Mich., was declared misbranded. The Bureau of Chemistry reported that analysis showed that the contents of the capsules consisted essentially of a mixture of essential oils and resins, including oils of santal and cinnamon and copaiba and gurjun balsams. The preparation was declared misbranded because the trade package contained such claims as:

"Penslar Sancop Pearls for Chronic or Sub-acute Inflammation of the Mucous Membrane of the Urethra, Chronic Discharges from the Urinary Passages."

"Penslar Sancop Pearls . . . for Chronic or Sub-acute Inflammation of the Urinary Passage, Chronic Discharges from the Urethra, etc. . . ."

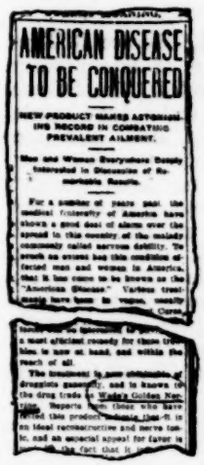
These were declared false and fraudulent and in August, 1919, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8880; issued May 18, 1921.*]

Lezajskie Lecznicze Wino Elixir.—Walter Wojtasinski, who did business under the trade name of Wojtasinski Chemical Co., Boston, Mass., shipped in October, 1919, a quantity of this preparation which was declared misbranded. The Bureau of Chemistry reported that "Lezajskie Lecznicze Wino Elixir" consisted of a water-alcohol solution containing rhubarb and a trace of cascara. The stuff was falsely and fraudulently represented as an effective treatment, remedy and cure for all disturbances of the stomach, pains and dizziness of the head and a purifier of the blood. It was further falsely represented that the article was approved by the federal government when it was not. In November, 1920, Wojtasinski entered a plea of *nolo contendere* and was fined $25.—[*Notice of Judgment No. 8955; issued May 24, 1921.*]

Porose Pills.—The Lafayette Co., Berlin, N. H., consigned between June, 1919, and June, 1920, quantities of these pills which the federal officials declared misbranded. The Bureau of Chemistry reported that the contents of the pills consisted essentially of iron (ferrous) carbonate, nux vomica, a laxative plant drug, arsenic and unidentified plant extractives. Claims were made on the trade package that these pills were unequalled for "delayed or even suppressed periods" and that they were the "best of regulating tonics for all women complaints." These and similar claims were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8921; issued* May 23, 1921.]

Gold Medal Compound Pills.—The Ashland Supply House, Chicago, is alleged to have shipped in July, 1920, a quantity of this preparation which was misbranded. The federal chemists reported that the pills consisted essentially of iron (ferrous) sulphate, aloes and oil of pennyroyal. The pills were sold under the claim that they were "a Most Effectual Emmenagogue" and that they would "Prevent Irregularities." These and similar claims were declared false and fraudulent and in December, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8918; issued May 23, 1921.*]

Wade's Golden Nervine.—The Gem Medicine Company of St. Louis, Mo., were alleged to have shipped in February, 1920, a quanity of this product which the federal authorities charged was misbranded. The Bureau of Chemistry reported that analysis showed the pills to consist essentially of iron, phosphates, strychnin, damiana and gentian. The preparation was recommended for "Nervous Debility in Men and Women . . . Weak Heart . . . Rheumatism, Neuralgia, Kidney Weakness . . . Stomach and Blood troubles generally" and similar conditions. These claims were declared false and fraudulent and in October, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8966; issued May 24, 1921.*]


AMERICAN DISEASE TO BE CONQUERED

NEW PRODUCT MAKES ASTONISHING RECORD IN COMBATING PREVALENT AILMENT.

Men and Women Everywhere Deeply Interested in Discussion of Remarkable Results.

For a number of years past the medical fraternity of America have shown a great deal of alarm over the spread in this country of the malady commonly called nervous debility. Its growth as grown has this condition affected men and women in America, that it has come to be known as the "American Disease." Various treatments have been in vogue, usually

Cures

a most efficient remedy for those who have it now at hand, and within the reach of all.

The treatment is upon administration of drugging passengers, and is known to the drug trade as Wade's Golden Nervine. Reports from those who have tested this product indicate that it is an ideal reconstructive and nerve tonic, and an especial aid for fever in with the fact that it

Allan's Star Brand Pills.—The Allan-Pfeiffer Chemical Co., St. Louis, Mo., are alleged to have shipped in August, 1920, a quantity of this product that was misbranded. The Bureau of Chemistry reported that the analysis showed the pills to consist essentially of aloes, iron (ferrous) sulphate and starch. The trade package bore such claims as:

"A Good Remedy in Suppressed or Painful Menstruation . . . to bring on the menses."

"To Prevent Irregularities Take one Pill . . . four or five days preceding the expected appearance of the menstrual period . . ."

These and similar claims were declared false and fradulent in that the pills contained no ingredient or combination of ingredients capable of producing the effects claimed. In November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8959; issued May 24, 1921.*]

Cheeseman's Pills.—A number of packages of "Dr. Cheeseman's Female Regulating Pills" were consigned by the Kells Co., Newburgh, N. Y., in February, 1920, and were declared by the federal authorities to be misbranded. The Bureau of Chemistry reported that the pills were composed essentially of aloes and iron (ferrous) sulphate. The package contained such claims as:

"Female Regulating Pills. . . . Obstruction of long standing . . . in recent cases of Obstruction. . . . When Obstruction is apprehended. . . . In cases of Impotency or Barrenness, Seminal Weakness, Gleets, Whites, and all diseases arising from a relaxed state of the genital organs, whether the result of disease, injuries or consequences of youthful indiscretion, or indulgence of the passions in riper years . . . all sufferings connected with the womb and its dependencies, . . . a specific remedy . . . the only curatives known to the world . . . designed to check and do away with irregularities."

In December, 1920, Eugene R. Siering, trading as Chas. Meyer, appeared as claimant of the property. Judgment of

condemnation and forfeiture was entered and the court ordered that the product be released to Siering on execution of a bond in the sum of $100 on the condition that the goods be relabeled under the supervision of the Department of Agriculture.—[*Notice of Judgment No. 8729; issued April 27, 1921.*]

Dr. Gunn's Blood and Nerve Tonic.—The United Medicine Co., Philadelphia, shipped in November, 1919, a quantity of this product which was declared misbranded. The federal chemists reported that analysis showed the preparation to consist of tablets composed essentially of aloes, phosphorus and strychnin. Such false and fraudulent therapeutic claims as those that follow appeared on or in the trade package:

"For Diseases of the Blood and Nerves Such as Dizziness, Despondency, General Debility and Weakness . . . with little strength and vigor."

"In cases where there is a weakness of the sexual organs take the tonic regularly . . . women and girls . . . for suppression of the monthly flow take the tablets regularly."

"For Diseases of the Blood and Nerves . . . Dizziness, Despondency, General Debility, Weakness . . . with little Strength and Vigor."

In August, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8857; issued May 18, 1921.*]

Hooper's Female Pills.—In May, 1920, the Horace B. Taylor Co., Philadelphia, shipped a quantity of this product which the federal officials declared misbranded. The Bureau of Chemistry reported that analysis of a sample of the article showed the pills to consist essentially of aloes and iron (ferrous) sulphate. The pills were sold under the claim that they were "a safe and sovereign remedy in female complaints" and "an emmenagogue in producing Menstruation" and to "open those obstructions which virgins are liable to" and "for the palpitations of the heart, giddiness, loathing of food, bad digestion, pains of the stomach, heating of the arteries of the neck, short breath." These claims were declared false and fraudulent and in October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8868; issued May 18, 1921.*]

Correspondence

SPIROCIDE AND THE INHALATION METHOD OF TREATING SYPHILIS

To the Editor:—For some time the Spirocide Corporation, 153 West Twenty-Third Street, New York City, has been billing the medical profession with a series of pamphlets attempting to show that they have an inhalation and fumigation treatment of syphilis which is "new, safe, convenient and easily administered," to quote their terms, and that "it has no disagreeable feature to alarm or distress the patient." They claim that this preparation will remove all signs and evidence of syphilis, no matter what the stage; advising the use of one of their inhalations every day, or every other day until six have been taken. To quote from their pamphlet, "A Safe and Successful Treatment," page 5, "these six treatments are sufficient to cause all symptoms of syphilis to disappear and clear the blood and body tissues of the treponema pallidum." They say, further: "In from ten days to three months positive Wassermann reactions become negative and rarely return to positive."

I have several criticisms to make. Their claim, in the first place—the inhalation treatment of syphilis by mercury—is not new, but has been used since the year 1506, and has been given up by almost every well trained syphilographer for many years because of the fact that it is not only irritating to the lungs, but also dangerous and of uncertain dosage. As early as 1735, inunctions were carefully tried out by the medical authorities of the University of Paris, and Astruc tells us that of the thirty-seven cases of fresh syphilis—all of them more or less of a mild type—that were treated at this test, four of the patients died during the course of the treatment, one of them as early as the ninth inhalation. Moreover, he tells us twelve of them, about one third, seemed to be benefited at the time; but later, even some of these showed signs of the recurrence of the disease. In other words, the inhalation treatment is not new, nor, in the second place, is it safe, so that the first two of their claims are entirely false. It is quite possible that their further claims for the remedy, that it is convenient and easily administered, are true; nevertheless, with the first two faults they amount to nothing. I wish to go on record as being unhesitatingly opposed to the inhalation treatment of syphilis, and to say that it is far from being free from danger.

I should also like to say that the Spirocide Corporation is making a very bold statement on its published card mailed to physicians showing a blood smear from a syphilitic patient containing *Spirochaeta pallida* and *Spirochaeta refringens* in rather large numbers in comparison with the number of red cells shown. It is a well known fact that even in secondary syphilis it is almost an impossible thing to find *Spirochaeta pallida* in the blood smear; and, certainly in such numbers, it is unheard of. In my many years of work with syphilis I have yet to see the blood smear from a case of secondary syphilis in which we found any *Spirochaeta pallida* present; and why, in such a patient, *Spirochaeta refringens* should be seen, only the Spirocide Corporation can explain. I should also be glad to have them explain to the medical profession how their inhalation treatment with mercury will remove *Spirochaeta refringens* from the blood stream as per their picture, saying nothing of their mythical *Spirochaeta pallida.*

The card with the graphic illustration of these organisms in the blood—before and after the inhalation treatment—reminds one of the hair tonic advertisement, "before and after."

H. N. Cole, M.D., Cleveland.

"ETIOLOGY OF THE COMMON COLD"

To the Editor:—Your comment on the "Etiology of the Common Cold" (The Journal, July 16, 1921, p. 206) strikes me as apt, and it should call for a discussion. I have believed for some years that common colds are due primarily to the development of bacterial growths in the accessory nasal sinuses, and that this development is caused by the obstruction of the drainage of these sinuses by the swelling of the nasal mucosa. Swelling of the mucosa is due in turn to irritation from some foreign substance, such as dust, bacteria and pollen. The bacteria are those ordinarily found in the nasal cavity and cause trouble only when the free access of air into the field is prevented by the swollen mucosa. This opinion has been strengthened by the fact that continuous treatment or spraying with a mild nonirritant astringent will in the majority of cases arrest an acute cold. When a cold holds on for as much as a week I have nearly always found cloudiness in one or more of the sinuses, and get immediate relief by washing out these sinuses with a mild alkaline solution.

G. M. Maxwell, M.D., Roanoke, Va.

To the Editor:—Referring to your editorial comment, July 16, on the causes of common colds, I have long been convinced that "colds" in the nose and throat are not caused by bacteria but are produced "primarily by temperature changes" which may "light up the bacterial flora already present" in the nose and pharynx. Repeatedly in my own experience the sudden chilling of a part of the body that has been warm and moist, the removing of a coat and sitting momentarily in a draft, or coming in warm and perspiring and sitting in a cool room would immediately produce a "goose-flesh" feeling

locally, and simultaneously a congestion of the nasal or pharyngeal membrane. At times I had a moment's warning, a trifling local chilliness with stuffiness of the nose, which if I heeded and got up instantly and moved about I could prevent from becoming a full fledged "cold." Even when the sneezing had begun with leakage at the nose—a sign invariably with me of developed "cold in the head"—I could as invariably abort these "colds" by (1) strenuous exercise maintained until all sensation of stuffiness of nose and throat had gone; or by (2) a short cold foot bath; or (3) a longer hot foot and leg bath; or (4) by application of an electric heating lamp; following this by quickly covering the feet and legs, keeping them warm either in shoes by motion or in bed wrapped warmly (this if retiring). Thus I have been able to abort "colds" in myself and others repeatedly and, I may even venture to say, invariably. Whenever a "cold" developed and was in a situation where I could not apply the abortive treatment mentioned, and I could not get up instantly and move, I found that lively exercising and straining the *muscles below the knees* to keep the blood there—to prevent the sudden contraction of the arterioles there and the simultaneous dilatation of those in the mucous membrane of nose and pharynx—would suffice.

If bacteria were the primary cause instead of congestion produced by chilling of a remote part of the body, surely I could not oust them in the incipient stage of a "cold," with sneezing and watery discharge already present, by quickly restoring normal circulation through the body.

J. W. MACMILLAN, M.D., Avon-by-the-Sea, N. J.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PROCAIN DERMATITIS

To the Editor:—A patient who consulted me has had a dermatitis of an obscure type on the forehead, involving also the eyebrows, ears, hands and thighs. This eruption is pale, macular, itching and desquamating. At times there are some itching papules, of the same color as the skin. There is troublesome burning. It was thought that metol, a photographic chemical, might be the exciting cause, but it apparently is not. This man uses procain freely and is not very careful about getting the fumes of a boiling solution, or about getting the solution on the hands. Can you refer me to any literature on this subject? Can you tell me whether any toxic effects have been observed from the use of procain? What treatment is used for dermatitis due to this cause?

FRED E. CLOW, M.D., Wolfboro, N. H.

ANSWER.—Lane (*Archives of Dermatology and Syphilology*, March, 1921) cites the cases of three patients who had dermatitis of the hands which appeared following the use of procain. When discontinuing the use of this substance or on wearing gloves, the irritation disappeared and the hands became normal. Skin tests carried out with procain indicated that it was the specific cause. Treatment is, of course, palliative, and includes removal of the etiologic factor.

REMOVAL OF SILVER STAINS

To the Editor:—Can you advise me of anything that will remove silver nitrate stains? I have heard that a preparation of sodium sulphite is used. I use silver nitrate daily and get it on my hands. Am anxious to know what will remove it.

J. P. BRANDON, M.D., Essex, Mo.

ANSWER.—Among the methods which have been suggested for the removal of such stains are: a thorough rubbing with a salt grease, such as bacon grease, followed by scrubbing with soap and water, or the application of dilute solutions of mercuric chlorid. Painting silver nitrate stains with tincture of iodin will change the black stain to an almost invisible yellow silver iodid stain. Treatment of this stain with ammonia water will decolorize it further.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vighne, Juneau.
FLORIDA: Jacksonville, Aug. 1. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.

Ohio January Examination

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports that 37 candidates, including 1 undergraduate, were licensed by reciprocity at the meeting held Jan. 4, 1921. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University		(1919)	Dist. Colum.
College of Physicians and Surgeons, Chicago		(1891)	Illinois
Illinois Medical College		(1902)	Penna.
Northwestern University		(1920, 2)	Illinois
Rush Medical College		(1900)	Illinois
Indiana University School of Medicine		(1916)	Indiana
Medical College of Indiana		(1898)	Indiana
Hospital College of Medicine, Louisville		(1901)	Indiana
Kentucky School of Medicine		(1901)	Kentucky
Louisville Medical College		(1904)	Washington
Louisville National Medical College		(1911)	Kentucky
University of Kentucky		(1901)	Indiana
University of Louisville		(1916)	W. Virginia
Johns Hopkins University	(1903) Missouri,	(1919)	Maryland
University of Maryland		(1898)	Maryland
Tufts Medical College		(1920)	Maine
University of Michigan Medical School	(1908), (1918), (1920, 3) Michigan	(1899)	Penna.
University of Michigan Homeopathic Medical School		(1906)	Michigan
Columbia University		(1902)	New York
New York Homeopathic Med. Coll. & Flower Hosp.		(1918)	Penna.
University of Buffalo		(1902)	New York
Pulte Medical College		(1889)	Kentucky
Jefferson Medical College		(1901)	California
University of Pennsylvania		(1896)	Penna.
University of Pittsburgh		(1918)	Penna.
Medico Chirurgical College of Philadelphia		(1912)	Penna.
Meharry Medical College		(1906)	Alabama
Medical College of Virginia		(1916)	Virginia
McGill University		(1907)	Maine
University of Toronto		(1911)	Penna.
Undergraduate			Alabama

Arkansas May Examination

Dr. T. J. Stout, secretary, Arkansas State Board of Medical Examiners, reports the written examination held at Little Rock, May 10-11, 1921. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Of the 23 candidates examined, 22 passed and 1 failed. Twenty-six candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Arkansas	(1904) 87.7,	(1906)	85.1
College of Physicians and Surgeons, Little Rock		(1910)	82.5
National Univ. of Arts and Sciences Medical Dept.		(1912)	81.5
University Medical College of Kansas City		(1899)	88.7
Jefferson Medical College		(1911)	90.7
College of Physicians and Surgeons, Memphis		(1909)	80.4
Meharry Medical College	(1918) 75,	(1921)	77, 77.7
Memphis Hospital Medical College	(1902) 82.6, 86, (1904) 87.7	(1892)	82.9
Vanderbilt University		(1917)	82.6
University of Tennessee	(1921) 78.6, 83.6, 84, 84.1, 84.7, 86.		86.6, 88.6
	FAILED		
Meharry Medical College		(1902)	43.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University		(1918)	Illinois
Rush Medical College		(1911)	Illinois
University of Illinois		(1913)	Texas
Kentucky School of Medicine		(1908)	Mississippi
University of Louisville	(1805) Louisiana, Tennessee, (1921) Kentucky	(1911)	Louisiana
Tulane University		(1914)	Louisiana
Johns Hopkins University		(1920)	Maryland
University of Michigan Medical School		(1897)	Wisconsin
University Medical College of Kansas City		(1906)	Oklahoma
Washington University Medical School		(1916)	Missouri
University and Bellevue Hospital Medical College		(1913)	New York
University of Oklahoma		(1917)	Oklahoma
University of Pennsylvania		(1915)	Penna.
Memphis Hospital Med. College	(1906) Tennessee,	(1911)	Texas
University of Nashville		(1905)	Mississippi
University of Tennessee		(1914)	Mississippi
Vanderbilt University	(1915), (1919),	(1920)	Tennessee
Baylor University		(1911)	Texas
University of Texas		(1918), (1919)	Texas

Book Notices

LYMPHOSARCOMA. LYMPHATIC LEUKÆMIA. LEUCOSARCOMA. HODGKIN'S DISEASE. By L. T. Webster. The Johns Hopkins Hospital Reports. Volume XX, Fasciculus III. Paper. Price, $1.50. Pp. 63, with 12 illustrations. Baltimore: The Johns Hopkins Press, 1921.

This monograph consists of a study of 123 cases of these perplexing lymphomatous growths, which exhibit a similarity and a relationship that notoriously lead to more difficulty and confusion than perhaps any other field in pathologic anatomy. Little help in differentiation is secured from this study which, as with other similar investigations, has failed to disclose any essential distinguishing points. The conclusion is reached that probably leukosarcoma, lymphosarcoma and lymphatic leukemia are different manifestations of the same disease, which is readily distinguished from lymphogranulomatosis, to which class of cases the author would limit the term "Hodgkin's disease," although it is quite certain that Hodgkin included in his clinical picture many other conditions. It also is assumed that this group of diseases, for which the term "lymphadenosis, leukemic or aleukemic" is preferred, is not a neoplasm but a direct response on the part of lymphocytes to some unknown infectious agent, although the evidence to the contrary does not seem to be adequately considered. It was found that cases in which the lymphocytes showed evidence of ameboid activity usually pursued a rapid, fatal course. As a careful study of a large amount of material in a most perplexing field of pathology, this monograph is a valuable contribution to the literature.

THE CHEMISTRY OF ENZYME ACTIONS. By K. George Falk, Harriman Research Laboratory, The Roosevelt Hospital, New York. American Chemical Society Monograph Series. Cloth. Price, $2.50. Pp. 136. New York: The Chemical Catalog Company, Inc., 1921.

The American Chemical Society has entered upon the laudable undertaking of publishing a scientific series, as well as a technologic series, of monographs. The purposes of the society are twofold: (1) to present the knowledge available on the chosen chemical topic in a readable form, intelligible to those whose activities may be along a wholly different line; (2) to promote research in the branch of science covered by the monograph, by furnishing a well digested survey of the progress already made in the field and by pointing out directions in which investigation needs to be extended. The editors of the scientific monographs are W. A. Noyes, G. N. Lewis, Lafayette B. Mendel, A. A. Noyes and Julius Stieglitz—two of whom are members of the Council on Pharmacy and Chemistry of the American Medical Association. The American Chemical Society is to be congratulated on this serious attempt "to found an American chemical literature without primary regard to commercial considerations." This is the first finished publication of the scientific series. The author has developed the treatise by considering the relations and theories of chemistry as of paramount importance. Thus, the introduction shows the interrelationship of "enzymes" and "catalysts," leading into modern conceptions from the electron point of view. Of course, the consideration of colloidal conditions are not neglected. The necessity of a proper understanding of the great rôle assumed by the actual acidity, hydrogen ion concentration—or, as is it more commonly spoken of—the "p_H," is particularly emphasized. As has been pointed out by THE JOURNAL a number of times before in reviews on chemical topics, there are few, if any, physiochemical subjects more important to the physician than that of hydrogen ion concentration. It is particularly striking that in the subject at hand, which affects so vitally living matter, the author states that the hydrogen ion concentration "is unquestionably one of the most important standards by which the properties of the solvent and the dissolved substances can be controlled." The next six chapters treat of the velocities and general theory of chemical reactions, and the properties, chemical and physical, common to enzyme reactions. In the eighth chapter, the material of the preceding chapters is brought to bear on the explanation of the mechanism of enzyme reactions; to the nonbiochemical worker the reasons for the chemical kinetics became apparent; and fitly following is the discussion of the utilitarian aspects rather than the purely scientific side of enzyme actions. The author points out that enzymes are associated with all living matter, in order to favor production of products which might otherwise be found in only small amounts; the actions are present in all phenomena accompanying growth, including metabolic and catabolic changes. Hence no apology is needed for dedicating a whole book to the subject. As to the industrial application of enzymes, the author erroneously points out that "takadiastase" is an "official pharmaceutical preparation." "Takadiastase" is *not* described in the Pharmacopeia; in fact, this proprietary has been rejected by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies. For those interested in enzymes and so-called vital processes, the book should be of great value. It abounds in references, but unfortunately it has no bibliography—a department which, it is hoped, will be incorporated in future issues of the scientific monograph series.

FEEBLENESS OF GROWTH AND CONGENITAL DWARFISM WITH SPECIAL REFERENCE TO DYSOSTOSIS CLEIDO-CRANIALIS. By Dr. Murk Jansen, O.B.E., Lecturer on Orthopaedic Surgery, University of Leiden, Holland. Cloth. Price, $5.00. Pp. 82, with 40 illustrations. New York: Oxford University Press, 1921.

As the title implies, this monograph takes up the feebleness of growth from a comparatively new angle. The cardinal principles on which the subject matter are based are: (1) Feebleness of growth is proportional to the intensity of nocivity; (2) feebleness of growth is proportional to the rapidity of the growth of the individual and its parts, and (3) feebleness of growth is characterized by enhanced sensibility and enhanced fatigability. The first portion of the book is devoted to the relation of fatigue of the mother to feebleness of growth in the child; several cases are reported which illustrate the correlation between the degree of the fatigue and the feebleness of growth. In this part the author takes up the question of the retardation of cell differentiation causing the thickening of cartilages, and he demonstrates this condition in rickets as an example. In the second part is considered congenital dwarfism, with special reference to dysostosis and cleidocranialisis. He associates with the condition not only the usual symptoms given but also the shortening of the intermediate terminal phalanges of the toes; the widened ends of the latter are missing as though they had been nibbled off; and, second, the bilateral narrowing of the chest. This also he finds to be constantly present. He believes that the chief factor in the production of this condition is a deficiency of the amnion, which produces cramping of the fetus in utero in the eighth week of fetal life. It is at this time that all parts affected in the condition are showing their greatest period of growth, and hence, according to the writer, the restriction of growh at this time is more effective in the parts concerned. He carries on this theory as an explanation of anencephaly, achondroplasia and mongoloid idiocy, and explains to a degree clubfoot and congenital dislocation of the hip on the same basis. The book opens up a new field for speculation.

A GUIDE TO THE DISEASES OF THE NOSE AND THROAT AND THEIR TREATMENT. By Charles A. Parker, F.R.C.P., Consulting Surgeon to the Throat Hospital, Golden Square, W., and Lionel Colledge, M.B., F.R.C.S., Surgeon to the Ear and Throat Department, St. George's Hospital, S. W., London. Second edition. Cloth. Price, $8.50. Pp. 583, with illustrations New York: Longmans, Green & Co., 1921.

This work is the delayed second edition of a textbook popular in British medicine a number of years ago. The present volume is impressive as a standard text and will make many friends in this country among students and practitioners. In one feature there is a unique departure from the usual construction of works on the nose and throat—the insertion of a section of four chapters dealing with the relation of the subject to general medicine. Acute and chronic infections, and chronic organic and constitutional diseases are reviewed and briefly discussed under separate headings. The book is well arranged and sensibly illustrated. In regard to operative technic and instrumentation, the usual criticism of European surgical methods may well apply to a number of recommendations in the volume.

Miscellany

NECESSARY QUALITIES FOR A SURGEON

Dr. E. Forgue, professor of clinical surgery in the school of medicine of the University of Montpellier, has just published in the *Presse médicale* an article entitled "Advice to Students Who Intend to Become Surgeons." This article brings out clearly and concisely the qualities that are indispensable for a surgeon. Physicians are not all equally suited for surgical practice. The future surgeon must have a delicate touch and a firm and dextrous hand; also good sight, good judgment and an ingenious mind. He must have what is known as a surgical temperament; that is, a mastery of himself and a presence of mind allowing him to face the gravest and most unexpected incidents. He must be endowed with great patience combined with firmness of character. He should be resolute of thought and quick of action. He should possess the necessary courage to face responsibility. Added to these forceful qualities, he must have polished manners and such control of language that he can convince, console and inspire confidence. The helping hand of the surgeon has been personified by mythology; for the centaur Chiron, the healer, gets his name from χείρ, hand, and it is also consecrated by the very term "surgery" (French *chirurgie*), which means in Greek "work of the hand." The technical training of the modern surgeon becomes broader and more complex as science progresses. It has become necessary for the future surgeon to spend a considerable length of time in the laboratories of pathologic and bacteriologic anatomy, in order to acquire knowledge of the methods of research, to interpret laboratory findings and to learn their clinical application; for diagnosis, operative indications and even operative results depend on the alliance between the laboratory and the clinic. The great problems of immunization, serotherapy and vaccination are matters of common practice, and no surgeon can be a stranger to them. No wise surgeon will think of forming a final opinion in serious urinary disease without determining the amount of nitrogen in the blood and the index of urea excretion. The deviation of complement aids in ferreting out syphilis, which is so often present; likewise sporotrichosis, and as a consequence the knife is abandoned when iodids suffice. The bacteriologic study of wounds during the war has furnished too valuable a guidance not to continue to profit by the information it offers in peace-time surgery. However, it does not suffice that a surgeon shall be gifted, learned, a good clinician, and a tried technician. In order to be successful, and especially, in order to hold a strong position in the professional world, he must have a high moral character. In this connection Forgue mentions a peculiar formula that Americans apply to their teaching; their aim is said to be the study of the three h's, the training of "head, hand and heart." The surgeon must set for himself the same goal.

THE ETIOLOGY OF YELLOW FEVER

In a lecture delivered before the Academy of Medicine of Havana, February 14 (*Sanidad y Beneficencia Boletin Oficial de la Secretaria* **25**:39 [Jan.-March] 1921), Dr. Guiteras dwells at some length on this subject and summarizes his reasons for the doubts which will still remain in his mind. These are, briefly, as follows

1. A discrepancy apparently exists between Noguchi's statements and our present knowledge of the epidemiology of yellow fever. If the disease was so easily communicable to a series of animals, including the dog and the guinea-pig, how is it possible to eradicate the disease by breaking the chain between the yellow fever and man, as was done in Havana? And how is it possible that there have never been any epizootic manifestations of yellow fever among these animals in the endemic centers and during great epidemic invasions?

2. Noguchi's organism is easily inoculated through various superficial lesions of the skin, whereas all fear of necropsies has been lost since the discoveries of Reed, Carroll and Lazear. Fomites, blood and viscera have been handled by careless assistants without ever causing infection. Fomites, in fact, appear absolutely innocuous.

3. The number of cases in which Noguchi has succeeded in demonstrating the presence of his parasite, either by direct blood examination or by inoculation into guinea-pigs, is relatively small.

4. Noguchi has had a considerable number of successes with blood taken after the third day of the disease, while the experiments of the American commission tended to show that the virus disappears from the peripheral circulation after the third day.

5. Noguchi's experiments with the transmission of his virus from man to the guinea-pig through the mosquito have been few. Out of six experiments, one was successful and one was doubtful, and he has not been explicit with regard to the details of the positive case.

6. The anatomic lesions found in guinea-pigs infected with the Noguchi organism are quite distinct from those that we find in man with yellow fever. On the other hand, they are identical with those found in Weil's disease and in pigs infected with either of the leptospiras.

7. The epidemiologic and clinical differences between yellow fever and Weil's disease are so fundamental that it is difficult to believe that they are produced by such closely allied organisms as are the two species, or subspecies, of Inada and Noguchi.

Dr. Guiteras then draws a contrast between yellow fever, so virulent in the old days, and Weil's disease at the present time.

8. Clinically, the two diseases are quite dissimilar: the period of incubation is short in yellow fever, and from seven to fourteen days in Weil's disease; of short duration and one single paroxysm in yellow fever, but with a remission in some cases similar to that of many acute febrile infections, and in Weil's disease a long duration with a recurrent type of fever, as in the relapsing fevers of similar spirochetal origin, etc.

9. Guiteras is under the impression that there is no convincing proof of the efficacy of the vaccine and serum prepared by Noguchi, and believes that they have come into play at times when active measures for the eradication of the disease were already in progress.

10. Hematologic pictures of the two diseases belong to quite distinct groups: that of Weil's disease conforming with the relapsing fevers, that of yellow fever with the hematologic formula of the filterable viruses.

Guiteras concludes: "It may be that the leptospiral infection found in some cases of yellow fever is a secondary infection similar to those that are found in influenza, the actual causative agent remaining as yet unknown. This, however, is but a theoretical suggestion. Let us hope that the genial Japanese investigator may be able to establish on a firm basis his discovery."

CENTENNIAL OF INTRODUCTION OF IODIN INTO THERAPEUTICS

Iodin was first isolated by Courtois, in 1811, but 100 years ago Dr. J. J. Coindet published his "Découverte d'un nouveau remède contre le goitre," after having reported on his success with the new remedy in the treatment of goiter at the annual meeting of the Société helvétique des sciences naturelles at Geneva, in July, 1820. The French Académie des sciences conferred on him a 4,000 franc prize, and the Bordeaux medical society awarded him another. The fame of iodin in the treatment of goiter spread, and it was used in many other diseases. In 1829, Berton advocated inhalation of the fumes of nascent iodin. The first enthusiasm with regard to iodin in the treatment of goiter and other pathologic conditions was soon followed by mishaps, and Coindet was denounced. The *Paris médical*, Nov. 27, 1920, quotes a letter from his son telling of his disappointment: "Held accountable for accidents for which only imprudent technic was really responsible, wounded in his dearest affections and in his reputation as an enlightened and cautious physician, he resolved to do no further research work, and in fact he never

published anything after this. But he urged me nevertheless to study the subject, if possible from a new standpoint." Coindet, Jr., therefore investigated iodism and found that the mishaps were as frequent with small doses, if not more frequent. Piorry maintained his enthusiasm for iodin to the last, and reported good results from having tuberculous patients smoke cigarets impregnated with iodin.

Medicolegal

Law Governing Physicians Is Law for Dentists

(Angulo v. Hallar (Md.), 112 Atl. R. 179)

The Court of Appeals of Maryland in reversing, without granting a new trial, a judgment recovered by the plaintiff, who sued the defendant, a dentist, for the alleged negligence and unskilfulness of his servant or employee in the extraction of the roots of a tooth for the plaintiff, says that it was referred to no cases in Maryland in which a dentist had been sued for malpractice, nor does it recall any. But there are a number of cases in which physicians and surgeons have been sued for malpractice, and there is no reason why the law laid down in those cases should not apply to dentists. The law as enunciated in such cases is that a physician or surgeon who holds himself out to the world to practice his profession by so doing impliedly contracts with those who employ him that he possesses a reasonable degree of care, skill and learning, and he is therefore bound to exercise, and is liable for the want of, reasonable care, skill and diligence, and he is responsible in damages arising as well from want of skill as from neglect in the application of skill. The cases are generally agreed on the proposition that the amount of care, skill and diligence required is not the highest or greatest, but only such as is ordinarily exercised by others in the profession generally. But while it is the duty of the professional man to exercise ordinary care and skill, a duty imposed on him by law, it will be presumed, in the absence of proof to the contrary, that the operation, or work, done by him was carefully and skilfully done. And because of such presumption, want of skill or negligence cannot be presumed, but must be affirmatively proved.

School Districts Cannot Maintain Clinics

(McGilvra et al. v. Seattle School District No. 1 et al. (Wash.), 194 Pac. R. 817)

The Supreme Court of Washington reverses a judgment which was rendered in favor of the defendants in this action wherein an injunction was sought to restrain the school district and its officers from maintaining in one of its school buildings, and expending funds of the school district for the maintenance therein, of a so-called "clinic," which might more properly be designated a "hospital," for the medical, surgical and dental treatment of the physical ailments of the pupils of the school district whose parents or guardians were financially unable to furnish such treatment. The court says that the question to be answered was: Have the school district and its officers legal authority for furnishing the use of, and equipping rooms in its buildings and the maintenance therein of such a clinic, by the expenditure of the taxpayers' funds collected and placed at their disposal for the sole purpose of maintaining the public schools of the district? Taking the whole of the law as found in the school statutes of the state which the court regards as lending any support whatever to the view that the school district and its officers possessed the powers which the officers were assuming, and threatening to continue to exercise, the court is quite unable to find in these statutes any power given to the school district officers other than the power to cause inspection of the buildings and premises of the district to be made with a view to making them sanitary and healthful, and to cause inspection of persons with a view to the exclusion from the school premises of all persons afflicted with contagious diseases, to the end that such diseases shall not obtain a foothold among the pupils and other persons whose duties require them to be on the school premises. Counsel for the school district officers called attention to, and relied on, the decisions of this court commonly known as the "playground" and "gymnasium" cases, wherein it was held that a school district has the power to acquire, by expenditure of the funds of the district, additional land for playgrounds for the pupils, and also at the expense of the district to construct and equip gymnasiums; but the court does not think that those cases were of controlling force touching the present inquiry. The rendering of medical, surgical and dental services to the pupils is, and always has been, the court thinks, so foreign to the powers to be exercised by a school district or its officers that such power cannot be held to exist in the absence of express legislative language so providing. The court sees no argument lending any substantial support, in a legal way, to the view that the school district and its officers possessed the powers they were seeking to exercise and threatening to continue to exercise. There was much in the argument of counsel for the school officers which might be considered as lending support to the view that such powers ought to be possessed by the school district and its officers, and it was probable that counsel had many well meaning people on his side of that question. The legislature may give heed to such arguments; but the courts cannot do so. Wherefore, the judgment of the trial court in favor of the defendants is reversed, and the case remanded to that court, with directions to render a judgment enjoining the school district and its officers from furnishing or equipping on the school premises, or elsewhere, appliances for the medical, surgical or dental treatment of the physical ailments of the pupils of the schools at the expense of the district, and from employing physicians, dentists or nurses for the rendering of such medical, surgical or dental treatment; it being understood, however, that such injunction shall not restrain the school district or its officers from the doing of these things at the expense of the district in connection with, and as may be necessary in, the maintenance of the parental schools of the district and the proper care of the pupils committed to such schools.

Sufficient Visits by Physician

(Bass v. Pioneer Life Ins. Co. (Mo.), 227 S. W. R. 639)

The Kansas City (Mo.) Court of Appeals, in affirming a judgment in favor of the plaintiff, says that the action was one on a policy of health insurance which promised the plaintiff indemnity for disability from sickness for the number of consecutive days that he was necessarily and continuously confined within the house, and therein regularly visited at least once a week by a regularly qualified physician. Feb. 14, 1919, he became ill from influenza, and was confined to his bed from that date to March 15. The testimony tended to prove that during that period his family physician called on him at his home on only two occasions, but that the physician received telephone calls and personal visits from relatives and neighbors on several occasions during the period; that the physician advised and prescribed for the plaintiff on such personal visits and telephone calls, and that he considered the plaintiff under his professional care during the period of illness. The testimony further showed that at least once during the period of his convalescence the plaintiff called at the physician's office. The defendant contended that the two calls made by the physician at the home of the plaintiff, and the telephone calls and personal visits of relatives and friends to the physician, and the prescriptions of the physician, did not meet the terms of the policy requiring that the plaintiff should be "continuously confined within the house, and therein regularly visited at least once a week." But the court holds otherwise. Obviously, it says, the meaning of the clause was that the physician must be weekly in attendance on the insured. The physician called at the plaintiff's house on February 14, saw him in person, diagnosed his case, and thereafter during the period of his illness prescribed for him, and the insured was under his professional care. To hold otherwise would be to make such a policy of insurance of very little value. The court thinks that the contract should have a reasonable construction and be viewed in the light of common sense.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
Colorado State Medical Society, Pueblo, Sept. 6-8.
Delaware State Medical Society, Rehoboth, Aug. 16.
Minnesota State Medical Association, Duluth, Aug. 24-26.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Washington State Medical Association, Seattle, Sept. 2-3.
Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

Midsummer Session, held at Winona, June 27 and 28, 1921

The President, DR. W. J. MCCARTHY, Madelia, in the Chair

Surgery of the Ureter

DR. E. S. JUDD, Rochester: The most common operation on the ureter is for the removal of stones. Stones are most often lodged in the lower third of the ureter, often very close to the ureterovesical juncture, and sometimes in the part of the ureter within the wall of the bladder. Methods have been devised for safely dilating the lower end of the ureter and allowing stones in this location to pass. This technic is so successful that it must be considered the treatment of choice in the majority of cases of stone in the lower third of the ureter. In cases in which there is a great deal of infection, or in which the stone is very large, or when the patient does not bear the cystoscopic examination well, it is preferable to perform the open operation when the stone is in the lower part of the ureter, it is usually best to remove it by operating.

Roentgen-Ray Diagnosis of Gastro-Intestinal Diseases

DR. M. J. NESSA, Sioux Falls, S. D.: Roentgen-ray diagnosis in diseases of the gastro-intestinal tract is efficient and reliable. A résumé of the clinical history should always be made in making the final diagnosis. A preliminary examination of the chest should be made to rule out pathologic thorax. Extrinsic pathology, such as genito-urinary, gall-bladder and bone lesions, must always be considered when present and associated with symptoms of so-called indigestion. Variation in the position and tone of the stomach are factors which may influence the pathologic condition present. Routine daily examinations until the colon is empty is good technic.

Diagnosis and Treatment of Chronic Lesions of Hip Joint

DR. F. J. GAENSLEN, Milwaukee: In the examination of hip lesions, it is important to strip the patient completely and to conduct the examination according to a definite plan, just as the internist proceeds according to plan in the examination of the chest. Unless this rule is followed, it is very likely that errors will occur. Inspection will disclose peculiarities in posture and gait, deviation from normal contour, awkwardness in removal of clothes, or in getting on the examination table. Palpation will determine the presence of muscle spasm, loss of normal muscle tone, elevation of surface temperature and tenderness. Mensuration is necessary to determine the degree of atrophy, apparent and real shortening, and disturbance in relation of Bryant's and Nélation's lines. The determination of range of motion, active and passive, and careful recording of findings is important not only in establishing the diagnosis but also for purposes of comparison with future records. The essentials in treatment are adequate fixation in plaster of Paris or a brace and relief from weight bearing. In children, operative measures are indicated only in exceptional cases, while in adults operative ankylosis of the joint or arthrodesis, in other cases resection, may be called for when conservative treatment fails.

The Child's Place in the Tuberculosis Campaign

DR. S. A. SLATER, Worthington: Authorities tell us that 70 to 90 per cent. of the human race is infected with tuberculosis before the age of 15 years, and that practically every one is infected before adult life. If this is true, infection is much more common than clinical tuberculosis since only about 10 per cent. develop it in a clinical form. It is this 10 per cent. which offers the problem and needs to be cared for before the disease becomes active. Special attention should be given to the child which is under par physically in order that he may overcome his physical handicap. It is remarkable to see what improvement these children make when living under the proper conditions, of keeping regular hours and getting sufficient and nourishing food. While many of these children are not suited for regular school work, they do well when placed in an open-air school with work adjusted to their strength. If childhood is the time when infection takes place, it is the time when the one infected should be treated.

Treatment of Sciatica

DR. WILLIAM O. OTT, Rochester: The results of treatment by epidural injections of saline solution containing procain and the removal of foci of infection in thirty-four cases of sciatica observed in the Mayo Clinic during a period of two and one-half years form the basis of this study. Of the thirty-four patients treated by epidural injections, fourteen received one injection, and thirteen, two injections; four, three injections; two, four injections, and one, five injections. Nine patients received complete and permanent relief; fourteen received partial relief, which allowed them to return to work; eleven did not receive any permanent benefit from the injection. Temporary relief, that is, for from two days to two weeks, either complete or partial, was obtained by thirty-one patients. In the greater number of cases foci of infection were removed, either a few days prior or subsequent to the injection, which were probably an occasional factor in the cure. In thirty-four cases of sciatica in which no definite removable cause could be found, the removal of possible foci of infection in 62 per cent., combined with repeated epidural injections, gave a permanent cure in 27 per cent., and permanent amelioration of symptoms, so that the patients could continue their occupation with a fair degree of comfort in 40 per cent.; 33 per cent. did not obtain permanent beneficial results.

Parenteral Infections in Infancy

DR. HENRY F. HELMHOLZ, Rochester: A breast-fed child, which had been doing well for months, became suddenly ill with vomiting and frequent stools. On physical examination, the findings, except for fever, were absolutely negative. The urine was free from pus. A cathartic was administered and the child seemed better the following day, but the fever still persisted. Numerous small, grayish follicles were visible in the throat, with considerable reddening about them. The child was kept on reduced feedings; the temperature was normal on the third day, and the recovery was uneventful. The patient on the first day appeared to be suffering from some primary gastro-intestinal disturbance, but by the findings in the throat the second day it was very evident that the disturbance of the intestines was secondary to the infection in the throat. The use of the cathartic was indicated to remove any undigested food that might irritate the intestinal tract. The uneventful recovery, therefore, would have made it appear that, had no further examination been made, the entire condition was due to intestinal disturbance.

Comparative Values of Antisyphilitic Drugs

DR. H. E. MICHELSON, Minneapolis: In attempting to classify the various drugs, one must consider first which drug has the most profound effect on the visible lesions of syphilis and can be given with the least danger to the patient. In our own experience, arsphenamin and neo-arsphenamin have about the same action on lesions. We believe that retrogression has been slower with sodium arsphenamin and silver arsphenamin. We are certain that mucous membrane lesions have been quite resistant to silver arsphenamin. Studies made on animals show neo-arsphenamin to be the less toxic. Silver arsphenamin has been given in long continued courses and has probably been better tolerated when so employed than when the other members of the group were used over a long time. This very likely is due to the much smaller therapeutic doses. The effect of all of the antisyphilitic remedies in their action on the Wassermann reaction is variable. The personal factor must be considered; and since the same individual cannot receive two drugs under precisely the same

circumstances, it is utterly impossible to make an accurate comparison. Nothing conclusive has been published to show that any member of this group of drugs possesses a selective action on any particular type of syphilis. In all arsphenamin courses the patient must be watched carefully and questioned for early warning symptoms on the part of the organism against further amino-arsenicals, and the slightest significant symptom should cause the operator to delay subsequent injections in order to avoid grave accidents. Until more evidence is at hand, we emphatically urge that mercury be used in connection with courses of any of the arsphenamins. We warn against overenthusiasm for any particular drug or regimen of treatment.

AMERICAN GYNECOLOGICAL SOCIETY

Forty-Sixth Annual Meeting, held at Swampscott, Mass., June 2-4, 1921

(Concluded from page 314)

Forced Labor

DR. JOHN O. POLAK, Brooklyn: In 200 cases of labor in contracted pelvis, recently studied, we found that 81 per cent. delivered spontaneously, or the labor was terminated with low forceps. This certainly shows that each case of relative contraction is at least entitled to a proper test of labor before the abdomen is sectioned. Furthermore, cesarean section is not without its morbidity and its mortality. Beck showed that there was a 30 per cent. morbidity in his study of 107 cases. Rupture of the cesarean scar is not an unknown possibility, and in my collective study of 2,000 cases by the leading operators throughout the country, there was a mortality of nearly 10 per cent. and of more than 2 per cent. in the elective group. Another procedure that should come up for consideration and comparison is hurrying the third stage of labor by expression of the placenta with the first uterine contraction after the child has been delivered. This is definitely unphysiologic in that it takes time for the uterus, by its contraction and retraction, to separate and expel the placenta and produce proper uterine hemostasis. While this practice may be safe in the hands of the trained specialist, it is bad practice and bad teaching for the practitioner and for students.

Ovulation and Menstruation and Postoperative Considerations

DR. THOMAS J. WATKINS, Chicago: The problem of the ovary relative to operative indications concerns the production of ova and corpora lutea. Unanimity of opinion exists relative to conservation of the ovary when conditions obtain which are favorable to reproduction. Opinions vary much in regard to conservation of the ovary for the purpose of production of corpora lutea. The corpus luteum during menstrual life has been proved to be an important part of the endocrine system. The physical changes that take place at puberty and the menopause emphasize the importance of the ovarian function. The usual good health which obtains after the menopause is completely established demonstrates the ability of the endocrine glands to compensate for the loss of the corpus luteum. No clinical or theoretical evidence indicates that excision of the fibroid uterus compromises the life or function of the ovaries unless they are so situated that the operation disturbs their blood or nerve supply. Conservation of menstruation has no value aside from its relation to reproduction.

Interpretation of Vesical Symptoms in Gynecologic Diagnosis

DR. F. E. KEENE, Philadelphia: I cannot emphasize too strongly the importance of making cystoscopic examinations in all gynecologic cases presenting vesical symptoms, even though the condition may seem quite sufficient to explain these symptoms. Not infrequently, by such a plan, lesions will be discovered which were unsuspected and which are of more vital import than those of the pelvic organs.

Perforating Hemorrhagic (Chocolate) Cysts of Ovary

DR. JOHN A. SAMPSON, Albany, N. Y.: Perforating hemorrhagic cysts of the ovary are hematomas of endometrial type. These hematomas manifest their "activity" during the menstrual life of the patient. Histologically, the epithelial lining of the ovarian hematoma is similar to that of the uterine hematoma owing to the retention of menstrual blood, often present in adenomyoma of the uterus. Periodic hemorrhages occur in the ovarian hematoma which are similar in gross and histologic appearance to that of menstruating endometrium. The chocolate contents of the ovarian hematomas resemble old menstrual blood. That material escaping from the ovarian hematoma may give rise to the development of adenoma of the endometrial type in the tissues thus soiled is further proof that these hematomas contain endometrial tissue.

Torsion of Cecum

DR. SIDNEY A. CHALFANT, Pittsburgh: Torsion of the cecum, while a rare condition, does occur and must be considered in making a diagnosis in obscure cases of intestinal obstruction. This is especially the case in patients presenting a history of obstinate constipation with previous attacks of severe pain in the upper abdomen.

Pneumoperitoneum as Aid to More Accurate Obstetric and Gynecologic Diagnosis

DR. REUBEN PETERSON, Ann Arbor, Mich.: In suitable cases and with the proper technic, gas inflation is free from danger. The method should not be used in cases of acute pelvic inflammation or when disturbances of circulation may arise from sudden abdominal distention. As carbon dioxid gas is absorbed within half an hour, it is preferable to oxygen gas for inflation since the latter gas may not be absorbed for days. Whenever possible the transuterine should be chosen in preference to the transperitoneal route for the introduction of the gas because of the valuable information it furnishes regarding the permeability of the fallopian tube.

Bacteriology and Pathology of Fallopian Tubes Removed at Operation

DR. ARTHUR H. CURTIS, Chicago: Gonorrheal infection is responsible for at least three fourths of all inflammatory lesions of the fallopian tubes. Infection with various types of streptococci has been second in frequency. Tuberculosis, exclusive of generalized tuberculous peritonitis, ranks third. Excepting a few streptococcus infections, bacteria have not been isolated from tubes which fail to show grossly active inflammation. Just as gonorrheal endometritis seldom becomes chronic, so it appears that gonorrheal infection of the tubes runs a quickly self-limited course. The present study sustains previous experience that the colon bacillus does not cause serious tubal disease. In streptococcus infection, tubal involvement is usually only a part of the picture. Perisalpingitis is the most frequent type of tubal lesion, although typical salpingitis occurs with moderate frequency.

Torsion of Uterine Adnexa Occurring Before Puberty

DRS. RICHARD R. SMITH and WILLIAM J. BUTLER, Grand Rapids, Mich.: Only twenty-six cases of torsion of ovarian tumors in childhood have been reported in the literature since 1900. About 50 per cent. occurred between the ages of 8 and 10. Sixty per cent. were dermoids. The symptoms are those of an abdominal crisis similar to that of the same accident in adult life, sudden abdominal pain, vomiting, a variable degree of prostration, tenderness, rigidity, distention, temperature, increased pulse rate, and the presence of an abdominal tumor. The diagnosis is usually difficult. Appendicitis is often the preoperative diagnosis.

Cure of Cystic Cervical Endometritis by the Aid of Multiple Scarification

DR. HENRY T. BYFORD, Chicago: Instead of using the ordinary lance pointed uterine scarificator only on cysts as they become apparent, I use a bayonet pointed one and make from fifty to a hundred punctures into the diseased area or areas from once to twice a week, and make an application of iodized phenol strong enough to destroy or cause atrophy of what remains of the epithelial cells in glands that are already seriously damaged by the inflammatory action, but not strong enough as used to destroy functioning glands. The application consists of one part each of iodin crystals and glycerin and two parts of phenol. A few treatments are made twice weekly, and then once weekly until the surface looks and feels normal.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Disease of Children, Chicago

July, 1921, **22**, No. 1

*Degree of Immunity to Diphtheria Insured by a Negative Shick Test. W. H. Park, New York.—p. 1.
*Range and Distribution of Blood Pressures in Normal Children. H. K. Faber and C. A. James, San Francisco.—p. 7.
*Tonsils and Scarlet Fever. J. G. M. Bullowa, New York.—p. 29.
*So-Called Inanition Temperature of New-Born. C. G. Grulee and B. E. Bonar, Chicago.—p. 44.
Congenital Absence of Middle Portion of Esophagus. F. C. Neff, Kansas City.—p. 57.
Recent Progress in Anatomy, Physiology and Pathology of Childhood. J. B. Holmes, Baltimore.—p. 61.

Degree of Immunity to Diphtheria Insured by Negative Schick Reaction.—A negative Schick test in cases which have an active immunity, either natural or acquired, when the toxin used and technic employed have been suitable, Park says, gives an almost complete security from diphtheritic disease, not only for the immediate time but for the future. Those that have natural antitoxin and those who acquire it through toxin-antitoxin injections may harbor diphtheria bacilli, and if they later suffer from tonsillitis, due to other microbes, throat cultures will contain diphtheria bacilli. The positive culture alone suggests but does not establish that the suspected case is one of diphtheria. Under unusual conditions it is possible that when diphtheria bacilli are present in a throat which becomes the seat of some other infection they may develop their toxin and cause superficial lesions in the mucous membrane even though the cases have sufficient antitoxin to give a negative Shick reaction. Cases which present this possibility are rare, and when met with by us have done well without additional injection of antitoxin. In the outbreak discussed by Park the fact that while an extraordinarily large percentage of all the children in the institution were carriers of virulent bacilli, only one group developed cases of tonsillitis with pseudomembranous patches makes it uncertain that the cases were diphtheria.

Blood Pressure in Normal Children.—Normal means and standard deviations for systolic, diastolic and pulse pressure and for pulse and pulse pressure—pulse product have been compiled by Faber and James for boys and girls separately, by year, between the ages of 4 and 16 years. Mean systolic pressure shows no significant difference between the sexes within the period studied. Mean diastolic and mean pulse pressure do show significant sexual differences. Standard deviations are in practically all cases greater for girls, indicating a normally greater variability in female children, which is particularly marked during adolescence. Illustrative examples of the method of measuring deviations in various pathologic states are given. The method, while involving the use of the reference tables, requires only a few seconds to apply.

Tonsils and Scarlet Fever.—Bullowa presents evidence which he believes lends support to the view that the inflamed tonsil is a focus of infection and that the cervical lymph nodes enlarge from it in scarlet fever just as they might enlarge in the absence of scarlet fever. The inflamed tonsil becomes a phlegmon on the wall of the pharynx. Rhythmic swallowing movements when they compress the tonsils force toxins or organisms into the lymph stream with subsequent inflammatory reaction in the adjacent lymph nodes. Prophylactic removal of the tonsil when buried or covered with plica or incision of the plica so as to uncover the tonsil prevents some of the severe complications arising from this source. Painstaking observation of the tonsil during scarlet fever is helpful and leads to the view that the infection is conditioned by the anatomic relations. In certain selected cases, tonsillectomy may be performed with benefit during scarlet fever.

Inanition Temperature of New-Born.—A careful study of observations made by Grulee and Bonar of 182 infants failed to reveal any regular relationship between the inanition or transitory fever of the new-born and the quantity of fluid ingested, nor did it reveal any definite relationship between the percentage of weight loss and the temperature. The authors, therefore, conclude that the temperature rise in question is not regularly to be explained on the basis of dehydration, and since clinically the condition is clear cut, it would seem likely that the explanation for this fever must be made on some other basis. There could be very little doubt that forcing of food after this temperature has risen is accompanied by a fall so rapid that it seems more than likely that there is a definite causal relation between the taking of food and the fall of temperature. It has been suggested that meconium is a poor medium for the growth of bacteria. With the stimulation to digestion and the flow of the gastric and intestinal juices produced by the taking in of food, the meconium is unquestionably mixed with large quantities of fluid and hence would be rendered a better material for the growth of bacteria. Meconium consists almost entirely of protein material the destruction of which would most readily account for the presence of indican in such a large proportion of urines from new-born infants. With the addition of breast milk to the diet, the putrefactive processes in the intestine are reduced. It seems most likely that temperature elevation at this time may be ascribed to the absorption of some protein products, bacterial or otherwise from the intestines of the new-born. That the condition does not give rise to more serious symptoms than are present may be explained by the transiency of the fever period and by the rapid change of the condition within the intestinal canal.

Annals of Otology, Rhinology and Laryngology, St. Louis

March, 1921, **30**, No. 1

Etiology of Acute Inflammations of Nose, Pharynx and Tonsils. S. Mudd, S. B. Grant and A. Goldman.—p. 1.
Borderland of Otolaryngology and Ophthalmology. H. W. Loeb and M. Wiener, St. Louis.—p. 74.
Developmental Anatomy of Temporal Bone. L. Rogers, Minneapolis.—p. 103.
Radical Treatment for Chronic Suppuration of Antrum with Modification of Canfield Technic. W. H. Theobald, Chicago.—p. 131.
Submucous Replacement for External Deviation. T. E. Oertel, Augusta, Ga.—p. 147.
Foreign Body in Esophagus Removed by External Esophagotomy; Cure. J. N. Roy.—p. 159.
Borderline Diseases of Esophagus. H. L. Lynah, New York.—p. 164.
Removal of Tonsils in Presence of a Peritonsillar Abscess. J. Holinger, Chicago.—p. 195.
Report of Cases. 1. Simple Mastoidectomy on Man, 81 Years Old. 2. Infective Sigmoid Sinus Thrombosis—a Positive Blood Culture with Streptococcus Mucosus Capsulatus Present. J. W. White, Norfolk, Va.—p. 199.
Lethargic Encephalitis as Postoperative Complication of Acute Mastoiditis; Report of Case. M. J. Siegelstein, New York.—p. 201.
Tonsillar Hemorrhage. T. E. Fuller, Texarkana, Ark.—p. 205.
Pathologic Nasal Accessory Sinuses in Children. F. W. White, New York.—p. 221.
Atypical Mastoiditis; Report of Three Cases. E. Gill, Roanoke, Va.—p. 228.
Accidents in Aural Paracentesis. J. F. Strauss, Chicago.—p. 232.
Asthenic Hypoacousis. H. J. Inglis, Boston.—p. 237.
Paralysis of External Rectus in Right Eye Following Mastoiditis in Left Ear. D. Roy, Atlanta, Ga.—p. 244.

Illinois Medical Journal, Oak Park

July, 1921, **40**, No. 1

State Medicine in Germany. E. Ries, Chicago.—p. 1.
Jejunal Diverticula. H. N. Mackechnie, Chicago.—p. 4.
Mental Reconstruction. R. T. Hinton, Elgin.—p. 9.
Obesity. J. Kercher, Chicago.—p. 14.
Seeing and Believing in Diagnosis of Smallpox. A. L. Hoyne, Chicago.—p. 22.
Blood Transfusion. R. King, Olney.—p. 25.
Diabetes Insipidus. H. A. Cables, E. St. Louis.—p. 28.
Prevention of Deformities of Extremities. A. B. McQuillan, E. St. Louis.—p. 29.
Diagnosis and Treatment of Ureter Obstruction. F. Buckmaster, Effingham.—p. 31.
Lessons of World War for Internist. H. Brooks, New York.—p. 37.
Intestinal Sand; Report of Case of Twenty Years' Standing. F. M. Fuller, Keokuk, Ia.—p. 45.

Journal of Orthopaedic Surgery, Lincoln, Neb.

June, 1921, **3**, No. 6

Fractures Occurring in Bone Grafts. S. A. Smith, Cardiff, Wales.—p. 270.
Possibilities of Suture After Extensive Nerve Injury. M. F. Brown, Bangour.—p. 277.

Journal of Urology, Baltimore

April, 1921, **5**, No. 4

*Primary Carcinoma of Kidney with Impacted Ureteral Calculus. H. G. Bugbee, New York.—p. 267.
Varying Types of Prostatic Obstruction. A. Randall, Philadelphia.—p. 287.
Treatment of Gonorrhea and Its Complications with Vaccines. W. W. Townsend, Burlington, Vt.—p. 309.
Stopcock and Fittings for Attaching Chismore Evacuating Bulb to Buerger Cystoscope. V. C. Pedersen, New York.—p. 313.
*Relation Between Spina Bifida Occulta and Certain Cases of Retention. A. L. Chute, Boston.—p. 317.
*Primary Carcinoma of Male and Female Urethra. R. F. O'Neil, Boston.—p. 325.
*Tuberculosis of Kidney Complicated by Impacted Pelvic Calculus. H. A. Fowler.—p. 345.
*Use of Mercurochrome As General Germicide. H. H. Young, E. C. White and E. O. Swartz, Baltimore.—p. 353.
Fluoroscopic Examination of Injected Kidneys, and Report of Case. F. R. Hagner.—p. 389.
New Combined Cystoscopic and Roentgen-Ray Table. H. H. Young, Baltimore.—p. 391.

Primary Carcinoma of Kidney.—Bugbee's patient was a man, aged 44, who gave a history of renal colic as far back as 1892. Fifteen years ago he had another attack, following which he noticed that after riding horseback his urine was sometimes claret-colored, but he had no colic or other urinary disturbance. He had no serious illness or urinary symptoms until October, 1918, when he had a severe attack of influenza. Two weeks after the onset of the influenza he developed profuse hematuria, pain and tenderness in the left upper quadrant and left lumbar region. Later moderate frequency and urgency of urination were noted, and a mass was palpable in the left upper abdomen. He rapidly lost flesh and strength, became decidedly anemic. There was an indefinite mass in the left upper quadrant and lumbar region, which was not hard, was slightly tender and movable. The right kidney could not be felt. The external genitalis, prostate and vesicles were negative. A roentgenogram revealed a large oval calculus in the left ureter at the point of obstruction to the catheter, 25 cm. from the bladder. Pyelogram showed the renal pelvic outline destroyed. The preoperative diagnosis was impacted uteral calculus and pyonephrosis. The postoperative diagnosis was primary carcinoma of the kidney. The patient died five months later.

Spina Bifida Occulta and Retention.—The mechanism of the retention in these cases, Chute believes, is probably an interference with the nerve supply of the detrusor due to a pulling or to a pressure on fibers of the cauda which results in a partial paralysis of the muscle. As the cause of the retention in these patients is probably due to a mechanical interference with fibers of the cauda, it is useless to look for permanent relief by any means other than attacking the problem mechanically at the point where the interference has taken place. Operations carried out for the relief of symptoms caused by spina bifida occulta in general have consisted either in dissecting out the fatty, fibrous mass pressing on the cord or cauda or in separating the nerve fibers that are attached to the scar that fills the bony defect in the vertebral canal. Usually this is followed by a plastic operation to close the defect in the body canal. These operations have not been as a whole very satisfactory, but they have occasionally given remarkable results. They seem to be attended with neither the mortality nor the discouraging results that have attended most operations on cases of ordinary spina bifida cystica. It would seem probable that the earlier these operations were carried out, the more hopeful the outlook for the restoration of the bladder function. In some cases of long duration a pressure myelitis has developed. Chute believes that this condition of spina bifida occulta will be found to explain certain very perplexing and trying bladder conditions.

Primary Carcinoma of Urethra.—Two cases are reported by O'Neil, and the literature is reviewed. From the age of the reported cases, the disease rarely occurs before 50. Among the predisposing causes trauma is mentioned, also leukoplakia resulting from chronic urethral irritation. Stricture is present in more than 50 per cent. of the cases. In the majority of the cases the bulbous urethra is the seat of the neoplasm. The early symptoms are not characteristic of the malignant nature of the lesion and are generally such as would coincide with the ordinary urethral stricture. One of O'Neil's cases was typical in history and examination of urethral stricture with abscess, but no pus was found on incision; instead, a brittle cavity surrounding the bulbous urethra, the tissue removed showing carcinoma.

Impacted Pelvic Calculus in Tuberculous Kidney.—That true stone and tuberculosis do at times occur in the same kidney is shown by Fowler's case, in which the stone was impacted in the pelvic ureter, causing complete obstruction. By reason of the occlusion, Fowler was unable to obtain any secretion from the right kidney, and was unable, therefore, to determine the nature of the tumor mass before operation. The real pathology was not suspected until the excised kidney was examined.

Mercurochrome as General Germicide.—The authors report on 187 cases of urethritis, 40 cases of cystitis and 17 cases of pyelitis, treated with mercurochrome. Mercurochrome is an effective germicide but has not proved to be vastly superior to all other drugs in acute gonorrhea, although certainly quite efficient. The intense stain is a drawback to its use as an injection by the patient. Acriflavine is free from this objection. In chronic infections of the urethra, prostate and vesicles its great value has been amply proven. It penetrates deeply and may be found in the prostatic secretion several days after posterior instillation. The results obtained in many cases of chronic cystitis are remarkable, long standing infections often clearing up in a few treatments. The coccus infections are more resistant to mercurochrome than the colon bacillus infections. In some cases which fail to become sterile, constant reinfection of the bladder is found to occur from kidneys or prostate. Mercurochrome is less irritating and produces less reaction in the renal pelvis than silver nitrate solution, while possessing about equal germicidal powers, but in some cases both drugs should be used alternately, and sometimes silver is better. Continued use has proved mercurochrome to be a most satisfactory dressing for venereal ulcerations and buboes. In general surgery, reports indicate that mercurochrome is very valuable in dressing open wounds and sinuses. The germicidal efficiency of the drug in other branches of medicine and surgery has been proved, especially in the treatment of infections of the throat, nose, sinuses, ear and eye. It is reported to be most efficient in disinfecting the throats of diphtheria carriers.

Laryngoscope, St. Louis

June, 1921, **31**, No. 6

Cosmetic Surgery of Nose. G. Selfridge, San Francisco.—p. 337.
Equilibrium and Vertigo. F. C. Lewitt, San Francisco.—p. 347.
Double Mastoid Operation; Acute Thyrorenal Exhaustion. J. G. Callison, New York.—p. 359.
Case of Facial Paralysis. A. M. Rooker, Niagara Falls, N. Y.—p. 363.
Case of Extensive Lateral Sinus Thrombosis, with Special Reference to Low Resection. H. M. Goodyear, Cincinnati.—p. 365.
Tuberculosis of Middle Ear. F. Leegaard, Christiania, Norway.—p. 374.

Michigan State Medical Society Journal, Grand Rapids

June, 1921, **20**, No. 6

Existing Relations Between Medical Profession and Public and Future Tendency. A. McLean, Detroit.—p. 225.
Manifestations of Damage from Labor. C. H. Judd, Detroit.—p. 231.
Pretuberculous Child in Schools. L. Jones, Flint.—p. 234.
Chemical Blood Analysis as Diagnostic Aid. O. A. Brines, Detroit.—p. 235.
Subcutaneous Emphysema Due to Ruptured Larynx in Untreated Case of Diphtheria. M. B. Kay, Detroit.—p. 240.
Two Cases of Epidemic Encephalitis. S. Wilson and F. Weiser, Detroit.—p. 241.
Case of Intra-Uterine Fractures. M. Burnell, Flint.—p. 243.

July, 1921, **20**, No. 7

Attainment of Certain Ideals in Obstetrics. A. M. Campbell, Grand Rapids.—p. 263.
Digitalis Therapy. J. B. Whinery, Grand Rapids.—p. 266.
Peripheral Nerve Injuries. W. T. Dodge, Big Rapids.—p. 268.

Military Surgeon, Washington, D. C.

June, 1921, **48**, No. 6

Part of Medical Department in Maintaining Military Morale. L. C. Duncan.—p. 613.
Diseases Described by Medical Men Who Suffered with Them. H. Rolleston, London.—p. 648.

Department of Epidemiology for Army Divisions. O. G. Brown.—p. 657.
Malignant Tumors in United States, 1917-1919. W. P. Finney.—p. 672.
Two Panama Mosquitos. H. G. Dyar and C. S. Ludlow.—p. 677.
Measles Virulence: Explanation of Variation. J. G. Cumming, Ann Arbor, Mich.—p. 681.
Costochondral Graft for Repair of Skull Defects. A. M. Hanson, Fairbault, Minn.—p. 691.

Minnesota Medicine, St. Paul

May, 1921, **4**, No. 5

Cleft Palate and Harelip Procedures. T. W. Brophy, Chicago.—p. 283.
Cleft Palate and Harelip. W. L. Shearer, Omaha.—p. 293.
Attempt to Unify and Harmonize Points of View of Medical and Dental Professions Toward the Constitutional Influence of Dental Pathology. W. E. Mentzer and E. L. Tuohy, Duluth.—p. 305.
Consideration of Treatment of Lesions of Thyroid Gland. E. S. Judd, Rochester, Minn.—p. 315.
Puncture of Antrum of Highmore. H. R. Lyons, Rochester, Minn.—p. 319.

Missouri State Medical Association Journal, St. Louis

July, 1921, **18**, No. 7

Diagnosis and Treatment of Brain Tumors. E. Sachs, St. Louis.—p. 217.
Radiotherapy in Nonmalignant Gynecologic Diseases. G. Gellhorn, St. Louis.—p. 220.
Radiotherapy in Malignant Gynecologic Diseases. F. J. Taussig, St. Louis.—p. 224.
Conservative Tendencies in Modern Gynecologic Therapy. H. Ehrenfest, St. Louis.—p. 226.
*Experiences with Lyon-Meltzer Method for Diagnosis of Gallbladder Disease. J. E. Cook and L. F. X. Wilhelm, St. Louis.—p. 230.
Pompholyx. R. C. Lounsberry, Springfield.—p. 232.

Lyon-Meltzer Method of Diagnosis of Gallbladder Disease.—Their experience does not encourage Cook and Wilhelm to attach gerat diagnostic weight to evidence obtained by means of the Meltzer-Lyon method, mainly for the reason that too often there is doubt as to the source of the bile obtained.

Nebraska State Medical Journal, Norfolk

July, 1921, **6**, No. 7

Infantile Eczema. F. S. Clarke, Omaha.—p. 193.
Infantile Cyclic Colic. J. V. Reilly, Grand Island.—p. 195.
Dry Milk in Infant Feeding. E. V. Wiedman, Lincoln.—p. 197.
Civilian Surgeon's Story of Great War. H. W. Orr, Lincoln.—p. 201.
Three Hysterectomies. W. H. Betz, Omaha.—p. 204.

New Jersey Medical Society Journal, Orange

July, 1921, **18**, No. 7

Chorea; A Case. C. F. Adams, Hackensack.—p. 223.

New Orleans Medical and Surgical Journal

July, 1921, **74**, No. 1

Importance of Securing Bony Union Following Fracture of Patella. E. D. Martin, New Orleans.—p. 4.
Inorganic Constituents of Blood as Related to Internal Medicine. W. Denis, New Orleans.—p. 8.
*Hemorrhage into Upper Digestive Tract, with Especial Reference to Arterial Disease as Cause. S. K. Simon, New Orleans.—p. 13.
*Treatment of Granuloma Inguinale. W. A. Reed and M. Wolf, New Orleans.—p. 25.

Hemorrhage Into Digestive Tract.—The occurrence of massive hemorrhage into the digestive tract has been observed by Simon in three patients, as a result, apparently in each instance, of a diseased state of the arterial system with especial localization in the vessels of the stomach and duodenum. While the presence of arterial disease could not be verified, because of lack of opportunity for direct inspection at the site of the hemorrhage, nevertheless the close association exhibited by the vascular accident in each case, with a manifestly morbid state of the arterial system as a whole, has seemed sufficient to warrant the assumption of some definite relationship between the two conditions.

Treatment of Granuloma Inguinale.—The old classical form of treatment having failed to yield any results in these cases, Reed and Wolf infected tartar emetic intravenously. Solutions of antimony and potassium tartrate are prepared with freshly distilled sterile water in 1 per cent. strengths and intravenous injections are given at intervals of from three to seven days, starting with an initial dose of from 2 c.c. and increasing the amount 2 c.c. each time until therapeutic results are obtained. Some of these patients are receiving as much as 14 c.c. at an injection. A few slight and transient reactions have been observed. A sudden paroxysm of coughing occurred in one case immediately after the injection and in another diarrhea and vomiting occurred. These two reactions occurred on reaching a dose of 8 and 10 c.c., respectively. The authors have been able to demonstrate the Donovan bodies in three of these cases and at the present time are endeavoring to grow cultures of the organism with a view of inoculating experimental animals if possible.

New York Medical Journal

July 6, 1921, **114**, No. 1

Cooperation in Endocrinology as an Introduction to Research on Morphologic Constitution. J. A. Hammar, Upsala, Sweden.—p. 1.
Relation Between Suprarenal Cortex and Sexual Development. K. H. Krabbe, Copenhagen.—p. 4.
Problem of Suprarenals. E. Gley, Paris, France.—p. 9.
Evolution from Status Thymicolymphaticus. W. Timme, New York.—p. 12.
Endocrine Dyscrasias in Production of Epileptic States. J. H. Leiner, New York.—p. 16.
Endocrines in Everyday Practice. C. E. De M. Sajous, Philadelphia.—p. 20.
Endocrine Tropisms. D. M. Kaplan, New York.—p. 26.
Study of High Blood Pressure in Women from Endocrine Point of View. J. Gutman, Brooklyn.—p. 31.
Endocrines as Factors in Causation and Treatment of Dysmenorrhea. W. V. P. Garretson, New York.—p. 35.
Radium and Roentgen-Ray Treatment of Hyperthyroidism. C. A. Simpson, Washington, D. C.—p. 36.
Ophthalmologic Implications of Endocrinology. P. Fridenberg, New York.—p. 38.
Clinical Value of Basal Metabolism Determinations in Diseases of Thyroid Gland. H. O. Mosenthal, New York.—p. 41.
Basal Metabolism and Endocrine Manifestations. A. S. Blumgarten, New York.—p. 43.
Relation of Endocrine Disturbance to Tinnitus Aurium. J. C. Scal, New York.—p. 47.
Progressive Systemic Deafness as an Endocrine Syndrome. J. G. Callison, New York.—p. 48.
Effect of Pituitary Extract on Rate of Urine Formation in Man. R. McBrayer, Sanatorium, N. C.—p. 53.

Philippine Journal of Science, Manila

January, 1921, **18**, No. 1

Fauna of Vigo Group: Its Bearing on Evolution of Marine Molluscan Faunas. R. E. Dickerson, San Francisco.—p. 1.
Philippine Scyphomedusan Jellyfishes. S. F. Light.—p. 25.
New Philippine Moraceae. E. D. Merrill, Manila.—p. 49.
New or Noteworthy Philippine Birds, III. R. C. McGregor, Manila.—p. 75.
Relation of Stocks to Mottled Leaf of Citrus Trees. H. A. Lee.—p. 85.
Enumeration of Japanese Aphelininae, Descriptions of Two New Species. S. Nakayama.—p. 97.

Southern Medical Journal, Birmingham

July, 1921, **14**, No. 7

*Radiography as an Aid in Differential Diagnosis of Pulmonary Disease. J. S. McLester, Birmingham.—p. 511.
Fluid in Pleural Cavity. W. W. Rucks, Oklahoma City.—p. 517.
*Diabetes Mellitus in Negro Race. I. I. Lemann, New Orleans.—p. 522.
Diagnosis and Treatment of Tuberculous Colitis. A. W. Calloway, Asheville, N. C.—p. 525.
Malnutrition in Children After First Year of Life. L. T. Royster, Norfolk, Va.—p. 532.
Milk and Butter in Nutrition of Childhood. W. H. Donnelly, Brooklyn.—p. 539.
Birth Trauma. W. D. Hereford, Huntington, W. Va.—p. 542.
*Ligation of Superior Thyroids in Patients with Exaggerated Toxic Symptoms. E. G. Jones, Atlanta, Ga.—p. 545.
Conservation in Skull and Brain Injuries. J. S. Turberville, Century, Fla.—p. 551.
*Case of Tuberculosis of Fascia. J. H. Blackburn, Bowling Green, Ky.—p. 556.
*Surgery of Bones and Joints: Description of New Operative Technic. M. Skinner, Selma, Ala.—p. 558.
Treatment of Fractures and Dislocations. F. G. Hodgson, Atlanta.—p. 566.
*Diverticulum of Ureter. J. H. Neff, University, Va.—p. 568.
Hydatidiform Moles: Case Report. C. R. Hannah, Dallas, Tex.—p. 572.
Operative Treatment of Chronic Suppurative Otitis Media, Comparative Indication of Radical and Modified Radical Operation. W. K. Simpson, Memphis.—p. 574.

Roentgenography in Diagnosis of Pulmonary Tuberculosis.—McLester summarizes his paper by stating that radiography in diseases of the lung will point at times unerringly to the correct diagnosis; at other times it will be of small value or entirely misleading; at all times it must be regarded merely as one phase of clinical inquiry.

Diabetes Mellitus in Negro.—Lemann's analysis of the hospital records of 160,044 patients with reference to the incidence of diabetes shows that this disease occurred in 0.86 per thousand negroes and 1.4 per thousand whites. All told

there were 194 cases of diabetes among the 160,044 admission. Diabetes is less common among the negroes than among the whites. The negro portion of the admissions is roughly 40 per cent., the negro portion of diabetes is 30 per cent., but the negro portion of such diseases as syphilitic iritis, gumma of the brain, gumma of the liver, aneurysm of the aorta, is 60 and 70 per cent. The negro portion of all cases of acquired syphilis is 56 per cent. and of congenital syphilis 52 per cent. If syphilitic pancreatitis is the chief or even a frequent factor in the production of diabetes, Lemann thinks it is strange that one does not see an abundance of diabetes in the negro services of the hospital which are so rich in all other syphilitic phenomena. It is fair to conclude, he says, that syphilis is playing on important part in producing diabetes.

Ligation of Superior Thyroids.—Jones analyzes replies received to a questionaire sent to the surgeons as to the results of ligation of the superior thyroids for goiter. On the whole the procedure is endorsed.

Tuberculosis of Fascia.—Blackburn's case was one of multiple cold abscesses which were metastases from a primary focus in the genito-urinary tract, limited by the fascia of different regions of the body. At no point was there a direct extension from a primary bone or lymphatic focus as is usually found.

Muscle Flap for Hip Arthroplasty.—Instead of using a fat and fascia flap for interposition between the head of the femur and the acetabulum, Skinner dissects up the two outer glutei from their point of insertion into the trochanter and then perforates this muscle flap at its base, threading the great trochanter through the perforation so that the two outer glutei muscles drop naturally in between the bones and they are quite thick enough and broad enough to prevent ankylosis.

Diverticulum of Ureter.—In the only two cases of this kind on record Neff says the defect was discovered after death and apparently had caused no harm during life. His own patient had had twenty or thirty typical attacks of right-sided renal colic. At operation he found about 8 cm. above the bladder a diverticulum coming off from the posterior lateral aspect of the ureter. The diverticulum was removed and the opening in the ureter repaired with interrupted sutures of catgut. The diverticulum measured 13 cm. in length and 2 cm. in diameter at the point of its ureteral attachment.

Tennessee State Medical Ass'n Journal, Nashville

June, 1921, **14**, No. 2

Present Status of Practice of Medicine and of Medical Education. L. L. Sheddan, Knoxville.—p. 41.
Treatment for Concomitant Squint; Plea for Early Operative Interference in Children; New Operation. O. Wilkinson, Washington, D. C.—p. 52.
Classification of Streptococcus. L. Arnold, Nashville.—p. 56.
Treatment of Catarrhal Deafness, with Especial Reference to Tinnitus Aurium. R. McKinney, Memphis.—p. 62.

Wisconsin Medical Journal, Milwaukee

June, 1921, **20**, No. 1

Use of Stimulants in Pneumonia. L. M. Warfield, Milwaukee.—p. 1.
Surgical Treatment of Empyema Complicating Pneumonia. W. Cunningham, Platteville.—p. 4.
Pathology of Pneumonia Found in Recent Epidemics of Influenza. D. Hopkinson and E. L. Tharinger, Milwaukee.—p. 10.
Local Anesthesia in Thyroidectomies. H. F. Derge, Eau Claire.—p. 14.
Megacolon. T. W. Nuzum, Janesville.—p. 17.
*Sacro-Iliac Joint Arthrodesis by Bone Splitting Method. F. J. Gaenslen, Milwaukee.—p. 20.

Sacro-Iliac Joint Arthrodesis.—The operative plan described by Gaenslen has been used in four cases, brief reports of which are given. A curved incision is made parallel to and about one-half inch above the crest of the ilium through the skin and subcutaneous tissue, extending from just behind the middle of the crest to the posterior inferior spine of the ilium. The flap is then dissected free to the outer margin of the crest. With a broad, flat chisel the posterior portion of the ilium is split to a depth of about two and a half inches into an inner and an outer leaf. The outer flap is broken at its base and deflected outward as far as possible, stripping off the periosteum from the adjacent portion of the ilium just below and anterior in order to increase the working space. The inner leaf of the split portion of the ilium is cut on a level with a point just above the posterior inferior spine to the extent of two inches. A vertical cut about one and a half inches in length is made from the anterior end of this incision extending toward the crest of the ilium at a point joining the middle and posterior third of the crest. The two points are now joined with a third chisel cut, a triangular piece of bone, therefore, being removed. The destruction of the joint is begun at the lowermost border of the sacro-iliac joint where it is plainly in view, and is carried forward from this point, working forward and slightly outward in general in the direction of the anterior superior spine of the same side. After eradication of the joint the deep trough is filled up with healthy cancellous bone chips removed during the course of the operation. The deflected outer leaf of the ilium is then brought into position and sutured along the crest to the inner leaf of the ilium which has been allowed to remain standing. In several cases the inner leaf was broken off toward the medical side, but in perfecting the technic of the operation on the cadaver it was found that the inner leaf could be left standing without adding to the difficulties of the operation.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

June, 1921, **2**, No. 3

*Reaction of Blood in Secondary Anemia. C. L. Evans.—p. 105.
Mechanism of Autolysis in Paroxysmal Hemoglobinuria. W. Yorke and J. W. S. Macfie.—p. 115.
*Antigenic Properties of Acetone-Extracted Bacteria. S. R. Douglas and A. Fleming.—p. 131.

Blood Reaction in Secondary Anemia.—Although the immediate effect of hemorrhage is a lowering of the alkali reserve of the blood, Evans claims that the response of the respiratory centers may partially compensate, or even overcompensate, for this change, so that the circulating blood may be either more acid, or less acid, or of the same reaction even after as before the hemorrhage. After twelve hours the reduction in alkali reserve is compensated, owing to increased excretion of acid by the kidney; subsequently the alkali reserve of the blood may become higher than the normal and remain at this level until the corpuscular regeneration is complete. The response is a protective one against acidosis.

Antigenic Properties of Acetone Extracted Bacteria.—Douglas and Fleming state that acetone-extracted bacilli form a convenient way of storing bacilli and apparently keep their antigenic properties unchanged indefinitely. They are very easily dissolved by tryptic and other proteolytic ferments. When employed as vaccines, acetone-extracted bacilli appear to have antigenic properties fully as great as vaccines made by other methods. They also form a very suitable antigen for use in complement fixation tests. Suspensions of these extracted bacilli are agglutinated by immune serum only after a long period and by dilutions more concentrated than is the case with suspensions of living or formolised bacilli. Preliminary experiments appear to show that acetone-extracted bacilli which have been digested with trypsin when injected into animals produce a marked increase (equal to or greater than undigested bacilli) of the bactericidal power, but the increase of the agglutinating power is very much less marked.

British Medical Journal, London

June 25, 1921, **1**, No. 3156

*Intrinsic Cancer of Larynx. St. C. Thomson.—p. 921.
*Hematuria as Seen by Surgeon. A. Fullerton.—p. 923.
*Schick Reaction. G. Ward.—p. 928.
Treatment of Syphilis in Macedonia on Active Service. T. H. Fowler.—p. 930.
Retrograde Catheterization for Impermeable Stricture of Urethra. W. J. Foster.—p. 931.
Suggested Autoinoculation of Rodent Ulcer. S. C. Dyke.—p. 932.
Pernicious Anemia: Repeated Doses of Calomel: Recovery. J. C. Ferrier.—p. 932.
Primary Organism in Cultures. C. B. Dyson.—p. 932.
Tartar Emetic for Venereal Granuloma. W. E. Giblin.—p. 932.

Intrinsic Cancer of Larynx.—An analysis is made by Thomson of fifty cases. Intrinsic cancer of the larynx originates on the vocal cords or in the subglottic area. It has never been found in the posterior commissure (interarytenoid region), nor originating from the ventricular bands or the ventricle of Morgagni in fifty cases carefully examined both indirectly with the mirror and by direct inspection after splitting the larynx. A malignant growth may originate on any part of a cord, but is more common in the central portion or anterior half than in the posterior area of the larynx. As is now well known, an epithelioma originating in this region remains for a long time limited to the cord affected and the adjoining side of the larynx, but it may cross the anterior commissure, and, in later stages, it invades the arytenoid and the area to the outer side of it. The inner surface of the cord may be affected primarily or by extension. The subglottic area may be invaded by a growth originating in a cord. But a cancer may also start below the level of the cords, in the subglottic area. A subglottic cancer is much more in the anterior than in the posterior half of the larynx. As regards prognosis: The superficial or projecting tumors of limited extent are the most favorable. Those situated in the middle third or anterior half of the cord are more promising than those invading the anterior commissure in front or the arytenoid region behind. Growths embedded in a cord, or extending into it below an intact mucosa are not so favorable. An epithelioma extending along the inner margin of a cord is still less favorable. Subglottic cancers are very unpromising as regards lasting cure by laryngofissure. They are frequently associated with impaired mobility or complete fixation of a cord. As regards operation: In every case, however limited the growth, the entire vocal cord should be excised from the anterior commissure up to and including the vocal process of the arytenoid. The growth, with as wide a margin as possible of apparently healthy tissue all round it, should be removed in one mass; the excision should therefore go down to the lower edge of the subglottic area; above, it should pass through the healthy ventricular band; and externally it must include the perichondrium lining the thyroid ala. To facilitate this the thyroid ala should be removed so that a laryngo-fissure is really a partial hemilaryngectomy.

Hematuria.—Tuberculosis of the urinary tract is very common in the North of Ireland. Nearly 10 per cent. of all cases cystoscoped by Fullerton had urinary tuberculosis, and in 75 per cent. of these hematuria was present. In the overwhelming majority the primary focus, as far as the urinary tract was concerned, was the kidney. In Fullerton's experience tuberculosis of the bladder, arising secondarily to deposits in the epididymis and testicle, is comparatively rare. Primary tuberculosis of the bladder, if it occurs at all, is so rare that such a diagnosis should not be made except after the most careful examination of all parts of the urinary tract. The character of the hematuria in most cases of tuberculosis of the urinary tract resembles that found in bad cases of cystitis. The blood comes for the most part from ulcers on the bladder wall. Severe hematuria from the kidney is not, in Fullerton's experience, frequent. He has seen forty-seven cases of renal hematuria in which it was the only symptom of disease except for some renal colic in a few, due, no doubt, to the passage of small clots down the ureter. In forty-four cases of renal calculus, out of sixty-one examined, the presence of blood was noted. The two cardinal signs of renal calculus are renal colic and hematuria, one or other or both of which may be entirely absent. Vomiting is also frequently present. Radiography will detect the smallest calculus. Hematuria was found in 113 cases of cystitis. In all it was moderate, and was often only discovered on microscopical examination. When visible it was generally of the terminal type, occurring at the end of micturition in the form of a few drops of blood with the last drops of urine. In some cases, and especially in those known as hemorrhagic cystitis, blood was mixed with the main part of the urine, although more pronounced in the last portion. Some of the most severe cases of hematuria met with were due to tumors of the bladder. In some cases, however, the hemorrhage was trifling—at any rate, in the earlier stages. Out of forty-six cases of vesical calculus examined the presence of blood is mentioned in thirty-four. Other conditions in which hematuria occurs are also discussed by Fullerton.

Schick Reaction.—Ward has made a careful study of this reaction. The test has given her very definite data as to which years are the most dangerous with regard to diphtheria infection in a child's life. These are between 6 months and 6 years, while the periods of lowest susceptibility appear to be under 6 months and over 15 years. These results are endorsed by clinical experience. It is of great value in deciding the difficult question of whether a patient is a carrier or is really suffering from diphtheria. It has, perhaps, its greatest value in showing to whom, among persons exposed to infection (for example, contacts, doctors and nurses), we may safely omit to give antitoxin—thus greatly minimizing the risk of anaphylaxis and also saving pain and expense. When possible, only those nurses who give a negative Schick reaction should be employed in diphtheria wards. Ward was able by means of the Schick test to ascertain, in cases which have previously had the disease or have had antitoxin, to what extent their immunity persists, and whether they have sufficient antibodies to overcome a fresh infection.

China Medical Journal, Shanghai

May, 1921, **35**, No. 3

Artificial Feeding of Foreign Babies in China. H. B. Taylor.—p. 193.
Parasites of Vertebrates of North China. E. C. Faust.—p. 196.
Treatment of Trachoma. C. C. Rush.—p. 211.
*Fibroma Molluscus; Report of Extensive Case. E. S. Tyau.—p. 213.
Postoperative Catheterization. R. G. Mills.—p. 217.
Report of Research Committee of China Medical Missionary Association on Pulse and Blood Pressure in Normal Individuals. W. W. Cadbury.—p. 242.
Analyses of Some Chinese Foods. H. Embrey and T. C. Wang.—p. 247.
Pathology and Its Relation to Medicine. C. Y. Wang.—p. 258.
Case of Hydatidiform Mole. W. C. Sweet.—p. 264.
Value of Hospital Records. L. F. Heimburger.—p. 265.

Four Thousand Tumors in Case of Fibroma Molluscum.—In 1880, Hashimoto reported a case of fibroma molluscum with 4,503 growths. In Tyau's there were 7,241 tumors. The man was 54 years of age. These growths began at 14. Although he was thickly covered from head to foot with nodules of various sizes, there was no feeling of pain or itching, no discomfort beyond a little inconvenience. His health and weight were not affected in the least until latterly. Two months ago he had an attack of dysentery with mucosanguinous stools numbering over ten times a day. This obliged him to lie in bed for a month. He then noticed pressure sores on his back followed by ulceration of the larger nodules over the lumbar region and nape with slight pain and offensive discharge. His entire body was well covered with profuse numbers of nodules most thickly over the back, then the head, neck, upper extremities, chest, and a few on the lower parts of the body. The palm, sole, and axillary regions remained free. There were also a few small nodules in the conjunctiva, the upper lip and palate. A great number of these growths were deeply imbedded in the subcutaneous tissue, as proved by necropsy, and these were not included in the grand total of 7,241. In size, they varied from that of a pinhead to that of a large potato; in shape, the smaller growths were mostly round and slightly elevated while the larger ones were pedunculated, pendulous, round or pyriform.

Glasgow Medical Journal

May, 1921, **13**, No. 5

*Examination of Blood in Cases of Cancer of Breast in Regard to Operation and Prognosis. E. D. Anderson.—p. 321.
Defects in Cardiac Rhythm in Relation to Cardiac Failure. G. A. Allan.—p. 333.
Cookery and Digestion. J. Adam.—p. 351.

Blood in Breast Cancer.—In addition to breast cases, cases of cancer of the uterus, lip, tongue and stomach, which were diagnosed clinically before operation, were also examined by Anderson. Of thirty cases examined, twenty-one were seen before operation. The average leukocyte count of these cases was 8,962 per c. m., and the average of the first count after operation in twenty cases (one being inoperable) was 7,410 per c. m. Eleven of the twenty-one patients has a

leukocyte count of over 10,000 per c. m. before operation. The highest leukocyte figure obtained in the thirty cases was 14,400. One week after operation. A fortnight later the leukocytes had fallen to 7,800 per c. mm. Five months later the leukocytes numbered 9,800 per c. mm. The changes in the number and appearance of the red cells were not very outstanding. The hemoglobin figure ranged from 40 to 75 per cent. The color index figure showed little change after operation. In none of the innocent cases was there a leukocyte count of over 10,000, either before or after operation.

Indian Medical Gazette, Calcutta

May, 1921, **56**, No. 5

Plea for More Frequent Use of Intravenous Medication, with Special Reference to Use of Iodin. J. W. Porter.—p. 161.
*Modified Bassini Method for Radical Cure of Hernia by Plication and Overlapping of Externus Obliquus Abdominis. K. K. Chatterji.—p. 162.
Chronic Lead Poisoning in Printing Presses of Calcutta. J. J. Campos.—p. 175.

Modified Bassini Method for Cure of Hernia.—After suturing the internal oblique muscle with Poupart's ligament, thus closing the inguinal canal and forming a floor for the cord, Chatterji lets it repose on it. He overlaps the external oblique in Halstead fashion and, while doing so, plicates its fibers, taking in here and there a few fibers of the internal oblique and transversalis. This strengthens the anterior wall and at the same time does not split the fibers of the external oblique, as in Halstead's operation.

International Journal of Psycho-Analysis, London

1920, **1**, No. 4

Child is Being Beaten. Contribution to Study of Origin of Sexual Perversions. S. Freud.—p. 371.
Erotism as Portrayed in Literature. F. J. Farnell, Providence, R. I.—p. 396.
Note on Hazlitt. L. C. Martin.—p. 414.
Trivial Incident. X.—p. 420.
Word-Play in Dreams. D. Bryan.—p. 423.

Japan Medical World, Tokyo

June 20, 1921, **1**, No. 2

*Experimental Study on Prophylactic Inoculation of Typhus Fever. S. Kusama.—p. 1.
*Prophylactic Inoculation in Human Against Scarlet Fever. I. Takahashi.—p. 4.
So-Called Digestive Ulcer of Gastro-Intestinal Tract. S. Goto.—p. 7.
Beri-Beri Like Disease in Mammalian Animals. M. Murata.—p. 12.
Transplantation of Rat Sarcoma in Adult Heterogeneous Animals. Y. Shirai.—p. 14.

Experimental Prophylactic Inoculation Against Typhoid.—None of the twelve monkeys that had been injected by Kusama either hypodermically or intravenously with such a small quantity of the virus as one-tenth or less of the minimum morbid dose had a febrile attack. This fact is important for the virus was injected without being attenuated. The degree of the immunity thus obtained was not the same with all the animals, as in the first experiment the hypodermic prophylactic injection protected the animals against fifty times the minimum morbid dose; in the second experiment, in which the prophylactic injection was made both hypodermically and intravenously, the animals were protected against five times the minimum morbid dose and in the third experiment, the hypodermic prophylactic injection protected the animals against five times the minimum morbid dose. The virulency of the blood of the experimentally infected monkeys was the strongest on the first and second days of the symptomatologic attack and gradually decreased in the course of the disease until it becomes at the end of the pyrexia scores of per cent. less virulent than its maximum. The intravenous injection produces a severer attack of the illness than the hypodermic.

Prophylactic Inoculation Against Scarlet Fever.—Blood was obtained by Takahashi from the median vein of a scarlet fever patient, on the sixth day of illness. The blood was transferred to four test tubes containing certain amounts of citrated solution so that 1 c.c. of the final solution in the test tubes had 0.0001 c.c. of the blood of the patient. Thus the blood was diluted 10,000 times with the physiologic sodium chlorid solution containing 1 sodium citrate. This dilution was used as the injection materials. From 0.5 to 1 c.c. of the solution were injected subcutaneously in the interscapular region of the author's five children. In all the cases there was no local reaction or general symptoms. Blood was obtained again from another scarlet fever patient on the sixth day and diluted with citrated (1 per cent.) physiologic sodium chlorid solution so that 1 c.c. of the final dilution had 0.1 c.c. of the blood. Neither local reaction nor general symptoms were observed in the four children injected. The results of these experiments prove Takahashi says that the injection of 0.0001 c.c. of the blood of a scarlet fever patient into children produces no reaction, but renders a certain degree of active immunity so that the introduction of the virus contained in 0.15 c.c. of the blood of the scarlet fever patient is completely prevented from causing the disease.

Lancet, London

July 2, 1921, **2**, No. 5105

*Injuries of Diaphragm: Special Reference to Abdominothoracic Wounds. C. W. B. Bryan.—p. 1.
*Feces in Alimentary Disorders. R. Coope.—p. 9.
*Unusual Type of Arrhythmia in Mitral and Aortic Disease. M. Davidson and H. G. Butterfield.—p. 12.
*Lymphadenoma and Tuberculosis. I. Fox.—p. 14.

Abdominothoracic Wounds.—In operations for strangulation and acute obstruction, Bryan says, the abdominal route will be employed, as a rule. In chronic cases, the thoracic method of approach has certain advantages; it allows adhesions to be divided under better observation, with more safety and better control of bleeding; the stomach pouch can be emptied before reduction; accurate suture of the diaphragm and any plastic measures demanded can be carried out more satisfactorily; and the pleura can be cleansed and its dryness insured at the end of the operation. If special difficulties arise, or a gastrojejunostomy is indicated, the thoracic operation is converted into an abdominothoracic one by prolonging the incision. In all types of operation the pleural cavity is open, so that the slight risks of operative pneumothorax are equally present.

Feces in Alimentary Disorders.—Coope insists that examination of the feces must be integrated with the clinical findings, usually with a thorough examination of the urine, sometimes also of the blood. Not infrequently it provides data which the clinician finds very valuable in making his diagnosis.

Arrhythmia with Myocardial Degeneration.—The case reported by Davidson and Butterfield revealed an extensive degree of myocardial disease in a heart so distorted owing to pathologic changes that identification of the auriculoventricular node and bundle in serial sections was a matter of great difficulty. The fibrosis, which was visible throughout the entire musculatura, appeared to have left the fibers of the bundle intact. The clinical features of the case also were unusual. The arrhythmia is striking, and at first suggests the appearance seen in tracings from patients who have been for some time under the influence of digitalis, and have reached the toxic stage where the familiar coupling of the beats is observed. However, digitalis was not given the patient, except for one emergency injection of digitalin, and there was no reason to suppose that he had been previously taking the drug outside the hospital. There is not sign of an *a* wave in any of the tracings, and the jugular pulse is of the ventricular type. It was concluded that the auricles were fibrillating, although the pulse did not at any time show the typical continuous irregularity. There was always an absence of any presystolic murmur at the apex, although the left auricle was greatly enlarged, and there was an extreme degree of mitral stenosis. The third of the *c* waves, which correspond with the third sound already mentioned, is apparently due to a second premature contraction of the ventricle, which, although audible to the stethoscope, was never strong enough to affect the radial tracings. The first premature contraction, represented by the second of the *c* waves, can just be detected in places in the radial tracing, but could never be felt in the pulse at the wrist. From the character of the attacks of semi-unconsciousness and the extreme slowness of the pulse (26) during some of these, the condition

appeared clinically to resemble that of heartblock, but no evidence appears in the tracings of independent auricular contraction, and the auriculoventricular bundle was subsequently shown to be structurally intact.

Lymphadenoma and Tuberculosis.—No gross tuberculosis lesion was found postmortem in Fox's case, the only macroscopic changes being those of Hodgkin's disease of abdominal type. In the affected glands and spleen, tubercle bacilli were found in fairly large numbers, for the most part without other cellular reaction than one which appears to be that generally described as peculiar to Hodgkin's disease.

Medical Journal of Australia, Sydney

June 4, 1921, **1**, No. 23

Dysenteric Infections. H. R. Dew and N. H. Fairley.—p. 453.
Epidemic Diarrhea. S. W. Patter and F. E. Williams.—p. 460

Medical Journal of South Africa, Johannesburg

March, 1921, **16**, No. 8

Epidemic Encephalitis. H. T. H. Butt.—p. 146.
Etiology of Scurvy. A. J. Orenstein.—p. 151.

Annales de Médecine, Paris

1921, **9**, No. 5

Pathologic Anatomy of Familial Hypertrophic Neuritis. A. Souques and I. Bertrand.—p. 305.
*Hippuric-Acid Test of Kidney Functioning. P. L. Violle.—p. 330.
*Phonendoscopy of the Lungs. E. May and J. Rouquet.—p. 335.
*Pathologic Physiology of Fever. E. Rist.—p. 352.
The Pancreas in Hodgkin's Disease. H. Sloboziano.—p. 362.
The Pancreas in Elderly Diabetics. Idem.—p. 366.
*Bile Pigments in Intestines. M. Brulé and P. Spilliaert.—p. 377.

Hippuric-Acid Test of Kidney Functioning.—Violle's further experience has confirmed the reliability of the "hippuric synthesis test" which he described last year, as summarized here, Aug. 7, 1920, p. 435. After the elimination of hippuric acid has been determined on a definite diet, then the patient is given two doses of 0.5 gm. each of benzoic acid and of glycocoll. The normal subject on the average diet eliminates about 0.4 gm. of hippuric acid. The day of this test he eliminates 1.1 gm. Substracting the normal 0.4 gm., this leaves 0.7 gm. as the experimental hippuric acid. The hippuric acid formed in response to the ingestion of benzoic acid represents a defensive reaction, and this suggests the participation of the liver. He gives here the findings in a few typical cases out of a large number of subjects with liver or kidney disease or both. The findings were always corroborated by the response to the methylene blue test and other measures for estimating the functional capacity of the kidneys. Uremia and albuminuria seem to occur in waves or single attacks, while changes in the formation of hippuric acid seem to be the reflection of more stable functional disturbances. Insufficiency of the liver does not modify the response to the hippuric synthesis test, and consequently this seems to belong exclusively to the kidneys.

Phonendoscopy of the Lungs.—May and Rouquet explain how enlargement of the phonendoscopic area corresponds to the extent of the sclerosis of the lung in connection with emphysema. When it covers nearly the whole of one or both lungs, there is always chronic bronchitis and changes in the lungs which sometimes are more pronounced than would be suspected from other findings.

Pathologic Physiology of Fever.—Rist reports a case of paroxysmal tachycardia in the course of paratyphoid fever in a man of 30. He had long been subject to paroxysmal tachycardia and had four long attacks during this fever. Each time, the fever dropped suddenly from 105 F. to normal or a little below, and kept at this low figure as long as the paroxysm of tachycardia lasted, while the pulse reached 200. Analysis of this case confirms the assumption that the fever is the result of exaggerated oxidations. The blood pressure dropped with the tachycardia. Thus from purely mechanical causes the blood accumulated in the splanchnic vessels, and the amount reaching the heart was correspondingly less. As less blood was thus pumped to the lungs, the amount of oxygen taken up was reduced in proportion. Hence there was not enough oxygen taken up to provide for the supplementary oxidations responsible for the fever. But the primary stimulus—whatever it may be—still persisted and as soon as the mechanical obstacle to the circulation was arrested by the heart's returning to its normal rhythm, the temperature began to climb again at once. The drop in the temperature was so sudden with the abrupt onset of the tachycardia that perforation of a viscus was assumed at first. The man recovered without sequelae.

Passage of Bile Pigments Into Intestine with Normal Course Arrested.—Brulé and Spilliaert confirmed in their experiments on dogs that urobilin may be found in the intestine when the common bile duct is completely obstructed, and that stercobilin reappears in the stools when there is retention of bile pigments in the organism. The latter reach the intestine by way of the blood. In twenty cases of jaundice, stercobilin was found in the clay-colored stools in over 50 per cent. In 62 per cent. of these with complete retention of bile, urobilin was found in the stools, as also when only bilirubin could be found in the urine. In 18 per cent. there was no urobilin in urine or stools, but in 33 per cent. it was found exclusively in one and not in the other. Stercobilin in the stools is thus no criterion as to the permeability of the bile passages, and urobilinuria is no evidence that they are not completely obstructed. Although no bile was reaching the duodenum directly, urobilinuria was pronounced in 65 per cent. of their total cases. This demolishes, they say, the "enterohepatic" theory of urobilinuria.

Archives des Maladies du Cœur, etc., Paris

May, 1921, **14**, No. 5

*Explanation of Delirium Cordis. S. de Boer.—p. 193.
*Masked Dissociation of Auricle and Ventricle Beat. R. Lutembacher.—p. 202.
*Total Stenosis of Thoracic Aorta. Follet and E. Caille.—p. 207.
*Patent Arterial Duct. L. Bard.—p. 212.

Delirium Cordis.—De Boer presents evidence that the impulse to the heart beat may pass through the heart muscle in two, three or more stages of fractioned systoles. The results of Mines' and of Garrey's research confirm this explanation of delirium cordis and of accumulated extra systoles.

Masked Dissociation of Auricle-Ventricle Beat.—Lutembacher shows how there may be a bigeminus or trigeminus beat of the ventricle with dissociation of the auricle and ventricle contractions.

Total Stenosis of Thoracic Aorta.—The youth of 17 presented hypertension in the arms, with very low pressure in the legs; the left ventricle was much enlarged and considerable collateral circulation had developed. There was also an inconstant murmur at the mouth of the aorta. He succumbed to meningeal hemorrhage. The stenosis was so complete that even a pin could not be passed through it, but probably the stenosis had not always been so extreme.

Clinical Picture with Patent Arterial Duct.—Bard shows how the clinical picture varies widely according as the blood flows from the aorta into the pulmonary artery or vice versa, with persisting ductus arteriosus. Four different sets of symptoms are possible, and the clinician should specify in each case the direction of the blood stream and whether the blood is arterial or venous.

Bulletin Médical, Paris

June 18, 1921, **35**, No. 25

Chronic Intestinal Stasis. V. Pauchet.—p. 509.
*Typhoid Spine. M. Bureau and O. Marchand.—p. 511.

Typhoid Spine.—The woman of 47 had pain in the spine early in her typhoid fever but suppuration did not develop until seventeen months later, and it returned six times in the course of two years until arrested by an autogenous vaccine. Typhoid bacilli were cultivated from the pus each time.

June 25, 1921, **35**, No. 26

*Tardy Manifestations of Syphilis. C. Abadie.—p. 527.
Classification of Arsphenamin Accidents. Emery and Morin.—p. 528.
*So-Called Traumatic Syphilis. C. Simon.—p. 530.
*Treatment of Inherited Syphilis. P. Fernet.—p. 533.
Wassermann Reaction in Blood and Urine. C. Simon.—p. 536.

Tardy Manifestations of Syphilis.—Abadie remarks that enough years have elapsed since arsphenamin was introduced

for us to estimate now its efficacy in warding off the tardy manifestations of syphilis. If this medication is truly effectual, we ought to see fewer children born with inherited syphilis, and fewer cases of neurosyphilis. But nothing seems to show that the proportion of syphilitic infants is growing less, and in his ophthalmologic service the number of cases with syphilitic disease of the fundus of the eye is larger than ever. The cases of general paresis crowd the hospitals for the insane, with no reduction in their numbers. In treatment of tardy manifestations in the retina and optic nerve, he is loyal to intravenous injections of mercuric cyanide in 0.01 gm. doses every second day. This drug can be kept up for years without harm, he says, and he has found it more effectual alone than when combined with arsenicals.

Traumatic Syphilis.—Simon adds to Pasini's recently published five cases, two from his own practice in which a traumatic injury of a region containing latent spirochetes roused them to virulence. A syphilitic lesion developed at the spot although the subject had been supposed to have been long cured of his syphilis.

Treatment of Inherited Syphilis.—Fernet seeks to emphasize the chronic nature of inherited syphilis, and the advantage to be derived from associating the proper organotherapy with specific treatment.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 3, 1921, **45**, No. 19

Mitral Stenosis in Relation to Syphilis. P. Merklen.—p. 815.
Subcutaneous Arsphenamin in Neurosyphilis. Tixier and Duval.—p. 818.
*Changes in Circulation Below Constricting Band. d'Oelsnitz.—p. 824.
*Symptoms from Compression of Sinus Cavernosus. E. Ledoux.—p. 827.
Autovaccine Treatment of Colon Bacillus Septicemia. F. Trémolières and Lassance.—p. 830.
Diagnosis of Cancer of Ampulla of Vater. Carnot and Libert.—p. 836.
Examination of Right Ventricle. C. Laubry and L. Mallet.—p. 840
Anaerobic Pleurisy in Typhoid. A. Compagnon.—p. 843.
Peripheral Venous Tension. M. Villaret et al.—p. 848.

Changes in Circulation Below Constricting Band.—D'Oelsnitz here describes the response in normal subjects, the enlargement of the veins after removal of the Esmarch bandage after five minutes of compression. In cases of sympathetic inhibition, this enlargement of the veins is very slight, while it is exaggerated with abnormally excitable sympathetic system.

Symptoms from Pressure on the Sinus Cavernosus.—In the case described by Ledoux, pain in the left orbit and temple developed suddenly and the eyeball protruded and the neck began to enlarge. In about six weeks diabetes insipidus developed, and gradually the nervous symptoms of hyperthyroidism became installed. The retrospective diagnosis was some lesion in the posterior lobe of the pituitary. This had compressed the sinus cavernosus and the nerves in that region. Under pituitary treatment (posterior lobe) the symptoms all gradually retrogressed and the man now seems to be entirely cured, seven years since the first symptoms.

Journal de Chirurgie, Paris

June, 1921, **17**, No. 6

*Hydatid Cysts of the Lung. D. Prat (Montevideo).—p. 529.
*Circular Constriction with Fracture of the Femur. P. Hallopeau.—p. 551.

Hydatid Cyst of the Lung.—Prat has operated in twenty-nine cases of hydatid cyst of one or both lungs, with recovery of all but two, and the deaths in these cases were from other causes. He operates as a rule at two sittings, the first intervention being restricted to means to induce adhesion, unless the cyst presents and can be evacuated at once. He gives an illustrated description of the technic. The patient sits astraddle of the operating table, leaning his head against the turned up end, in the "jockey position," his feet in stirrups. Under local anesthesia, Prat resects 6 or 8 cm. of the rib over the cyst, located with the roentgen rays. The parietal pleura is incised and the lung explored with the finger, and then a wick of gauze is introduced into the opening to induce adhesion; the wound is tamponed and left gaping and unmolested for twelve or thirteen days. Then the edges of the wound are drawn back, the cyst is punctured, its contents aspirated, and the cyst membrane removed. There never has been inoculation from the cyst in his experience, although the only disinfection is with iodin. He leaves a drain in the wound, and healing was complete in from twenty days to one or two months or, exceptionally, three months. He calls this technic the Lamas-Mondino method. It was designed at first for cases in which it proved impossible to harpoon the lung at first as intended, and its advantages soon led to its adoption as the routine procedure, under roentgen control. The case reports are given in detail.

Circular Constriction for Fractured Femur.—Hallopeau gives the technic for belting the stumps together to insure faultless healing, and illustrates some devices with which he improves on Parham's metal bands. One is a narrow metal plate to place over the fracture, with grooves in which fit the Parham strips to keep them from slipping. A sharp pointed spur at each corner grips the bone and prevents any slipping of the plate. Or it can be made with grooves for the Parham bands at one end and holes for screws in the other half.

Journal de Médecine de Bordeaux

June 10, 1921, **92**, No. 11

*Reconstruction of Fractured Long Bones. Charbonnel.—p. 305.
*Lesions of Bony Wall of Thorax. Creyx.—p. 311.
A Trip Through Indo-China. Cheyrou.—p. 313.

Reconstruction of Fractured Long Bone.—Charbonnel declares that the use of bone plates and other bone supports represents progress beyond what is attainable with non-absorbable aids in osteosynthesis. The dead bone is finally absorbed and its elements utilized in the new growth of bone. But to date circular constriction with metal bands or fixation with plates and screws has yielded the best results. His illustrations show the technic and the indications for the various procedures. He warns that the anatomic reconstruction of the bone does not hasten repair so that the limb can be used sooner for weight bearing. With a fractured femur he keeps the patient in bed for six weeks after the splint has been removed the fifteenth day. Fracture below the knee does not require more than six weeks in bed in all. The limb must be systematically exercised and massaged while the patient is in bed. When he is allowed to get up the recovery of function will be so rapid that the time lost in bed will be soon made up. If a foreign substance is left permanently in the tissues, it can be disregarded as, even if it would have to be removed later, this will require only an insignificant intervention under local anesthesia.

Ossification of Costal Cartilages.—Creyx found no trace of ankylosis in the articulation at either end of the ribs in 100 cadavers, including five with chronic rheumatism with ankylosis of certain other joints; forty-five with pulmonary emphysema, and thirty with pronounced arteriosclerosis. The costal cartilages were frequently ossified but the play of the rib joints was never impaired. In all but one of the forty-five emphysema cases the costal cartilages were more or less completely ossified, and he thinks that this precedes and entails the emphysema.

Journal d'Urologie, Paris

April, 1921, **11**, No. 4

*Impalement Injuries of Perineum. J. Ferron.—p. 265.
*Chronic Gonorrhea of Posterior Urethra. E. L. Gautier.—p. 289.
Supernumerary Blind Ureter. P. Guibal.—p. 307.

Impalement Injuries of Perineum.—In Ferron's seven cases the injury was from the horn of a bull, a branch of a falling tree, a pitchfork or oil can, or a blow from an umbrella tip in play. The two patients with injury of the urethra alone were both saved, but only one of the five with lesions of the bowel. They reached the hospital too late for effectual treatment. One of them might have been saved if he had been rushed to the hospital in an auto; Ferron did not dare to operate with merely kerosene lamp illumination. All such impalement injuries of the perineum are accompanied with profuse hemorrhage. The urine did not seep through the wound in the perineum until the third day in one case with two wounds in the bladder. An incision in the bladder only large enough to introduce a catheter to divert the urine should be supplemented by a retention catheter in the urethra to keep the shape of the latter. This catheter is kept plugged and

the space between it and the urethra wall is rinsed out with an antiseptic solution once or twice a day. The seven cases are described in detail. With wounds of the posterior perineum the intestines scarcely ever escape, and the rectal drip should not be attempted.

Chronic Posterior Urethritis.—Gautier discusses the symptoms, diagnosis and treatment, with accounts of ten cases. In all, the ordinary methods of treatment had been applied without relief. It requires topical application under endoscopy, silver nitrate, iodin, the actual cautery or high frequency current. The mucosa returns to normal under the latter without danger of hardening of the tissues. He uses for the purpose a No. 16 diathermy sound in an insulating shell, applying it one week to the anterior wall, the next week to the posterior, and so on. The tip of the sound must just escape contact with the tissues, and the current is turned on for only a few seconds, and the results then inspected. Actual contact chars the tissues and exposes to danger of stenosis later.

Médecine, Paris

June, 1921, **2**, No. 9

Recent Progress in Electroradiology. A. Zimmern.—p. 661.
*Physical Training. Gaston Vidal.—p. 671.
*Radium Treatment of Roentgen Dermatitis. J. Bergonié.—p. 675.
Measurement of Doses in Deep Radiotherapy. M. Lambert.—p. 678.
*High Frequency Current in Surgery. Heitz-Boyer.—p. 683.
The Electric Enema. Laquerrière and Delherm.—p. 690.
*Radium Treatment of Nevi. Simone Laborde.—p. 696.
*Phototherapy: Experimental and Clinical Aspects. Vignard.—p. 701.
The Occupational Output of the Severely Crippled. Gourdon.—p. 707.
Comparison of Spas of France and Germany. M. Piery.—p. 711.
Indications for Artificial Heliotherapy. H. Dausset.—p. 718.
Radium Treatment of Uterine Cancer. Regaud et al.—p. 725.

Physical Training.—The medical faculty of the University of Paris organized last year a course of training in physical education, and this year the French legislature passed a law making physical training and military preparation compulsory. M. Gaston Vidal, the undersecretary of state for technical training, is in charge of the work and is called the "sports minister." He has appointed a committee of scientific and sport authorities to study questions relative to general physical training and professional preadaptation and correction of occupational deformations. In this article he gives his views on the subject, and emphasizes in conclusion that physical training should not be limited to the young; its benefits should be extended to the adult worker whatever his field of work, intellectual or manual.

Curietherapy of Roentgen-Ray Dermatitis. — Bergonié relates that he has recently examined three roentgenologists who have had professional radiodermatitis benefited by application of radium. One of these physicians has had one finger amputated and amputation of another finger of the right hand was being considered. Another has already had four operations on the hands; the general condition was bad and the pains at times unbearable. Under exposures to radium, one of the physicians seems completely cured, all symptoms having subsided. The contemplated operation on the second has been abandoned; there is no more pain, and the stiff joints have become supple. The condition has been notably improved in the third; there is now scarcely any pain. The curietherapy has thus proved its efficacy for these roentgen lesions except the deep eschars involving the bone, with inadequate circulation and loss of muscle tissue. It seems to aggravate this class of lesions as in the third case mentioned. Most of this physician's lesions improved, but the deep eschars seemed to be whipped up to a more rapid course.

The High Frequency Current in Surgery.—Heitz-Boyer explains the special features which distinguish the high frequency current from other means to destroy tissues, its potency, the certainty of its action, the ease and convenience with which it can be manipulated, and the absence of any painful reaction. In addition to its numerous indications in disease of the bladder, urethra, ureter and prostate, he lists indications in general surgery: polyps and strictures in the rectum, nose and throat; condylomas, lupus, warts, etc. He found it particularly useful in treatment of hemorrhoids in fourteen cases, harmless, effectual and indolent. The absence of any painful reaction is particularly an advantage in this class of cases.

Radium Treatment of Vascular Nevi.—Laborde has found protruding nevi, angiomas, more susceptible to the action of curietherapy than flat nevi. The angioma type is more frequent in young children, and it should be treated early for various reasons, especially because in later life it may undergo fibrous transformation which renders it more refractory to the rays. These angiomas frequently develop during the first weeks of life, but no one heeds the small red point until it spreads considerably. It could be completely aborted, while still a mere dot, with a single electrolysis puncture. Under radium these small tumors sink down, turn brown, and then vanish without leaving a trace. Flat nevi are refractory to all physical agents, but radium may attenuate considerably the red color. Extreme caution is indispensable, as inflammation and teleangiectasis may develop at the time or even months later from the action of the radium. It is wiser not to attempt to decolor the patch completely, but stop the exposures when the red has been reduced to pink. She gives two sittings in two weeks; then waits two months and gives one sitting; then continues with a sitting once in three months. Small angiomas are given four or five thirty-minute sittings at six day intervals.

Phototherapy.—Vignard concludes his description of what can be expected from luminotherapy by saying that thermotherapy is the enemy of luminotherapy, as humidity and perspiration detract from the action of the light on the skin.

Paris Médical

Jan. 1, 1921, **11**, No. 1

Tuberculosis in 1921. Lereboullet and L. Petit.—p. 1.
*Scrofula: The Old and the New Conception. A. B. Marfan.—p. 13.
Asthma and Tuberculosis. F. Bezançon and S. I. De Jong.—p. 20.
Value of Artificial Pneumothorax. L. Rénon.—p. 24.
Prophylaxis of Tuberculosis in Infants. Bernard and Debré.—p. 27.

The Modern Conception of Scrofula.—Marfan comments on the comparatively recently acquired knowledge that immunity for acute diseases is something entirely different from immunity to chronic diseases. The first is the consequence of complete recovery; the other is a function of infection. With tuberculosis and syphilis, complete recovery causes the loss of immunity. The tuberculous lesions which used to be labeled scrofula are distinguished by their relative benignity and their power of conferring a certain degree of resistance against tuberculosis. The skin tuberculin reaction is always very pronounced, as also with impetigo, ecthyma, phlyctenular keratitis and ulcerative rhinitis, although the connection between these affections and tuberculosis has not been demonstrated otherwise. It is possible that an ordinary pyodermatitis assumes a special form in the tuberculous. He insists that the term scrofula should be retained, as facts are facts, and scrofula represents a morbid condition observed only in the tuberculous. The superficial lesions require special care in treatment to ward off and cure secondary infection.

Presse Médicale, Paris

June 18, 1921, **29**, No. 49

*Statistic Nosology. E. Rist.—p. 481.
*Access to the Heart. H. Costantini.—p. 483.
*Serodiagnosis of Tuberculosis in Children. J. Sévi.—p. 484.
*Bilateral Ligation of Carotid Arteries. C. Lenormant.—p. 485.

June 22, 1921, **29**, No. 50

Cardiac Organotherapy. A. Martinet.—p. 493.
Roentgenography of Tuberculous Lung. Pissavy and Saidman.—p. 494.

An Experience in Statistic Nosology.—This is the second part of Rist's recent study of the men exempted from military service in the nineteen years before the war. The first part was reviewed, July 2, p. 72.

Access to the Heart.—Costantini's incision skirts the costal arch from the eighth rib to the xiphoid process, then runs vertical, a little to the right of the median line, to the second interspace, and then horizontal to a point nearly perpendicular to the starting point. The sternum is divided to correspond, a little to the right of the median line. The flap thus formed can be raised to allow ample access to the heart without injury of ribs or pleura. The cartilage in the second space is cut along with the sternum, but the soft parts are left intact, and the intact left pleura is drawn out of the way with the flap of chest wall.

Serodiagnosis of Tuberculosis in Children.—Sévi obtained a positive deviation of complement in four of fifty-four supposedly healthy children in an institution. Further tests confirmed the presence of hitherto unsuspected active tuberculosis in these four.

Ligation of Carotid Arteries.—Lenormant reviews 19 recent cases he has found on record in which the carotid artery was ligated on both sides in treatment of pulsating exophthalmos. With the older cases this brings the total to 41. Only 5 of the 7 deaths could be traced to cerebral disturbance, but hemiplegia or other cerebral symptoms, slight or severe, developed in 24 per cent. This proportion is scarcely larger than after unilateral ligation. Fully 61 per cent. of the total recovered completely without by-effects of any kind. But for this it is indispensable that a sufficient interval should be left between the ligation on the two sides for the brain to become accustomed to the change in its circulation and for collateral circulation to develop. The data presented justify bilateral ligation when absolutely necessary.

Progrès Médical, Paris

June 11, 1921, **36**, No. 24

Isolated Rupture of Fetal Membranes. H. Vermelin.—p. 277.
Tincture of Garlic in Treatment of Pulmonary Gangrene. Loeper, Forestier and Hurrier.—p. 279.
*Tuberculous Meningitis in Adults. L. Ramond.—p. 280.

Tuberculous Meningitis in Adults.—Ramond comments on the completely different symptoms and course with tuberculous meningitis in children and in adults, saying that the fatal outcome is about the only feature common to both. He describes a typical case in a young man sent to the hospital with the diagnosis of typhoid. A week before, paresis of the right hand and aphasia—the whole lasting less than ten minutes and without any other symptom for a week calling attention to the nervous system—gave the clue to the rest of the clinical picture. He teaches that any cerebral symptoms coming on suddenly in an adult suggest the possibility of tuberculous meningitis, even in the absence of any symptoms of tuberculosis. This young man's symptoms indicated the mild flaring up of a latent pulmonary tuberculous process, and this had been mistaken for typhoid. Lumbar puncture revealed signs of irritation of the meninges, and a few days brought the full picture of meningitis, with death in high fever the fifteenth day from the first nervous symptoms. Tuberculous meningitis in adults is usually monosymptomatic, as in this case, for a time. In children, the meninges dominate the clinical picture, in adults, the brain, and the brain manifestations may be psychic, motor or sensory, and in the form of exaggeration or inhibition. Acute mania, melancholia, or coma may usher in the disease. Tuberculous meningitis should be suspected whenever the tuberculous complain of intense headache. It should be suspected also when delirium accompanies albuminuria in the tuberculous, as uremia is rare in tuberculous nephritis. Tuberculous processes elsewhere may show marked improvement as the meningitis develops.

Revue Franç. de Gynécologie et d'Obstét., Paris

Feb. 1, 1921, **15**, No. 12

*Uterine Fibromas and Retroflexion. P. Dalché.—p. 469.
Postpartum Inversion of Uterus. Le Louët.—p. 481.

The Evils of Uterine Fibromas.—Dalché comments on the difficulty of differentiating between a uterine fibroma and chronic congestion in the body of the retroflexed uterus with hysteralgia. With congestion there is usually a tendency to varices, hemorrhoids and ptosis. He combats it with half-hour hot sitz baths, with hot enemas. At night the woman takes a hot enema of 250 c.c. which is retained, lying prone on the bed. The heat and the weight of the water pressing on the uterus reduce the congestion and push it forward. Weeks may pass before the desired result is attained. Light massage aids, as also a chain of tampons impregnated with glycerin, pushed into the posterior vagina. The glycerin attracts the fluid out of the tissues; this should be repeated at least once a week. Ergot also aids by squeezing out the fluid from the uterus, and vasoconstricting drugs are useful. Constipation should not be allowed. The retroflexion once reduced, a pessary may render good service. In six months or a year the uterus will be found in normal position. Anteflexion is liable to be mistaken for a fibroma.

The glycosuria induced by fibromas may progress to actual diabetes, as in a case he describes in which the fibroma had developed rapidly during a pregnancy. He is inclined to ascribe this fibroma glycosuria to mechanical injury of the suprarenals. Hemorrhage in these cases is often kept under control by treatment as for diabetes plus organotherapy. The hemorrhages in the fibromatous uterus may exsanguinate the optic nerve, and total blindness result. He has had a case of sudden blindness from the bleeding of a duodenal ulcer, and warns to call in an ophthalmologist at once when visual disturbances follow severe hemorrhage. Nothing should be done that will add to the losses of blood. He has also seen cases of hemiplegia and other cerebral phenomena in the course of fibromas. When a fibroma becomes infected, the periodical release of toxins may induce recurring fever, deceptively simulating malaria.

Revue de Médecine, Paris

March, 1921, **38**, No. 3

*Sodium Salicylate. G. Caussade and P. Charpy.—p. 127.
The Duodenal Fluid. H. Mauban.—p. 146.

Sodium Salicylate.—Caussade and Charpy remark that the symptoms sometimes observed during salicylic medication are generally traceable to impurities in the original salicylic acid. Only ten cases are on record of fatal intoxication from the salicylates, and Pouchet has said of these that other causes can probably be incriminated in all but two. The gravest accident from their use is salicylic delirium; there may be actual mania for a time, but it soon subsides and the drug can be continued in small doses. The fatal dose is from 12 to 30 gm. but 30 gm. have been taken without fatal outcome. In acute articular rheumatism with involvement of the heart, tendency to pulmonary edema, tachycardia, intense and very painful polyarthritis, or the heart derangement may predominate, with blood in the pericarditic effusion—in these grave cases, large doses of the salicylates are necessary to arrest the disease before irreparable damage is wrought. They recommend in such cases to give 1 or 2 gm. of sodium salicylate to test the tolerance, and follow with more to a total of 10, 12, 14 or 16 gm. given in the course of from four to six hours, never all at once. This treatment is for men only; women are less tolerant than men. Children under 7 and men over 30 should also be excluded, as also subjects with damaged heart, kidney or liver or any nervous taint or intoxication of any kind. The salicylates are ineffectual in chronic rheumatism, and in cerebral and gonococcus rheumatism.

Schweizerische medizinische Wochenschrift, Basel

June 2, 1921, **51**, No. 22

*Acute Cholecystitis. A. Vischer.—p. 505. Conc'n in No. 23.
*Hemolytic Jaundice Aggravated by Altitude. Frenkel-Tissot.—p. 509.
Cesarean Section on Lower Segment of Uterus. A. Oetiker.—p. 513.
Sedatives for Painless Delivery. E. Jaeggy.—p. 515.

Acute Cholecystitis.—Vischer reviews the operative cases at the Basel surgical clinic from 1905 to 1917, a total of 119 cases with two operations on two of the patients.

Hemolytic Jaundice Aggravated by Altitude.—The young man, now 18, belongs to the family on which Minkowski based the first published description of hemolytic jaundice. The resisting power of the red corpuscles shows a pronounced drop when the young man spends a month or two at St. Moritz in the mountains, while the enlargement of the spleen and the subjaundice show no change. This case has been under close medical supervision for a number of years, and the tabulated findings suggest a theoretical explanation for the changes observed.

June 16, 1921, **51**, No. 24

Prophylaxis of Postoperative Pneumonia. E. Specker.—p. 549.
*Explanation of Sudden Thymic Death. H. Ryser.—p. 554.
*The Persisting Thymus. S. Yamanoi.—p. 557.
Epigastric Hernia. H. Köhl.—p. 560.
Febrile Herpes. R. Doerr and A. Schnabel.—p. 562.

Sudden Death in Status Thymolymphaticus.—Ryser analyzes the four explanations that have been advanced to throw light on "thymus death": pressure from the enlarged thymus; chemical autointoxication; lack of epinephrin or excess of thymus secretion, and, lastly, lymphocyte infiltration of the myocardium which Celeen found pronounced in six cadavers after sudden death in the status thymolymphaticus. Ryser ascribes importance to the constant hypoplasia of the chromaffine system in these cases, plus the excessive thymus functioning, but regards the infiltrations in the heart as the principal factor. In some of Riesenfeld's and Celeen's cases the muscle fibers in the heart had almost completely atrophied, with fatty degeneration. In Riesenfeld's cases the children with idiopathic hypertrophy of the heart died suddenly as they came to an age of greater physical exertion. He adds that sudden death, as with this thymic death, is being observed nowadays in persons who had apparently recovered from influenza or other infectious disease, the underlying degeneration of the heart entailing fatal arrest of the heart, the same as in these cases of constitutional inferiority of the heart and vascular system in the status thymolymphaticus.

The Persisting Thymus.—Yamanoi investigated the thymus in 303 persons over 25 who had succumbed to acute influenza, and in sixty older cadavers. In 26.34 per cent. of 187 men there was more or less persistence of the thymus, and in 20.68 per cent. of 116 women. The microscopic and other findings are analyzed. This total of 25.89 per cent. with a persisting thymus in persons between 25 and 50 shows, he says, that the persistence of the thymus is within the physiologic range, and we must cease regarding macroscopic thymus tissue after 25 as a pathologic phenomenon.

Archivio Italiano di Chirurgia, Bologna

May 31, 1921, **3**, No. 4

Grave Tetanus After Injection of Antiserum. V. Craglietto.—p. 318.
*Evolution of Connective Tissue Implants. B. Polettini.—p. 327.
*The Ureter in Renal Tuberculosis. G. D'Agata.—p. 367.
*Substitution of Fibula for Tibia. P. Fiori.—p. 380.
Testicle and Uterus in Hernial Sac of Apparently Normal Man. G. Bolognesi.—p. 393.

Connective Tissue Implants.—Polettini experimented with implants of tendons, arteries, cartilage and the cornea, devitalized and kept in alcohol for a time. The implants proved very useful to repair losses of substance, but nothing was seen that indicates the revitalization of the dead implanted tissue.

The Ureter with Renal Tuberculosis.—D'Agata gives photomicrograms of segments of ureters involved in the tuberculous process in the kidney. In 16.67 per cent. of thirty operative cases, the kidney lesion was mild, and the stump of the ureter after nephrectomy was cauterized and buried, and there have been no disturbances from it during the interval since, up to ten years. In 60 per cent. the upper segment of the ureter involved in the extensive disease in the kidney was resected with the kidney, and there have been no disturbances since. In one case advanced lesions in the prostate and one testicle subsided spontaneously thereafter, and the man is still in good health, fifteen years later. In 23.33 per cent. of the cases the kidney showed large and numerous cheesy foci and the ureter extensive destructive foci. In two in this group a fistula developed in the lumbar region, and in another case there was reflux of urine from the ureter stump. The upper segment of the ureter had been resected in these cases, and in one of the three in which these complications developed, calcareous deposits were evident. These may have interfered with the anticipated shriveling of the ureter after the nephrectomy. These experiences reiterate the importance of an early operation for renal tuberculosis, and show that the ureter can safely be left to itself in all but the most advanced cases, merely dividing it between clamps with the actual cautery, ligating with catgut.

Substitution of Fibula for Tibia.—Fiori's roentgenograms eleven years after the operation show that the shaft of the fibula has grown; the circumference of the leg is now only 2 cm. less than that of the sound side, and it is only 1.3 cm. shorter. The diaphysis of the tibia had been destroyed by five years of osteomyelitis. The technic for the bipolar implantation is described. The patient was a boy of 14, and now, eleven years later, weighs 69 kg. and in his work as an expressman carries loads to 100 kg.

Pediatria, Naples

May 15, 1921, **29**, No. 10

*Treatment of Infantile Paralysis. H. Bordier.—p. 433.
Rachitis in Syphilitic Infant. L. M. Spolverini.—p. 440.
*Means to Prevent Coughing Up of Tube. C. D'Anna.—p. 447.
Retention of Urine in the Prematurely Born. Laureati.—p. 457.
Vaccine Therapy in Typhoid in Children. G. Caronia.—p. 460.
Immunization Against Diphtheria. R. Vaglio.—p. 463.

Treatment of Infantile Paralysis.—Bordier emphasizes the necessity for prompt measures before conditions become irreparable in spinal paralysis, anterior poliomyelitis, etc. Much can be accomplished with diathermy, radiotherapy and galvanic electricity, the latter applied rhythmically and inversely to the muscles showing the complete or partial reaction of degeneration. The diathermy must be resumed during the course of treatment if the temperature of the part drops again below normal. The electric treatment must be kept up for months or even for years to obtain the full effect it is capable of rendering. He agrees with Bergonié that even the gravest prognosis may be completely transformed by intensive, well regulated, harmless and persevering electric treatment.

To Fasten the Intubation Tube.—D'Anna relates that further experience has confirmed the harmlessness and the reliability of Polverini's method of fastening the tube in the throat so that the child is free to be out of doors, etc., without danger of its coughing up the tube. He describes the five most recent cases in which this was done. An ordinary suture needle, threaded with 2 m. of strong silk, is introduced on the median line at the junction of the middle and lower thirds of the thyroid membrane, and is brought up and out through the mouth. The upper ends of the thread, after cutting off the needle, are tied around the O'Dwyer tube which is then introduced as usual. The lower ends of the silk thread, projecting from the neck, are tied over a roll of gauze, and thus fasten the tube permanently in place. The lower ends of the thread are coiled on the neck and protected with a dressing; the upper ends are tied around the ear. The disadvantages of such a thread are amply compensated by the freedom it gives the child, and the relief, in private practice, from dread of the tube's being coughed up. Sixteen years' experience with this method have placed it on a solid footing. The tube can be taken out to be cleansed at need. He says that if there is already a tube in the throat, this is not removed when the needle is introduced. The tip is guided by the finger in the throat until it can be seized with forceps.

Policlinico, Rome

June 6, 1921, **28**, No. 23

Estimation of Disability for Workmen's Compensation. S. Diez.—p. 779.
Benefit from Fixation Abscess in Typhoid. P. Cataldi.—p. 787.
Ether in Treatment of Whooping Cough. A. D'Aroma.—p. 788.
*Chronic Peritonitis. P. Gilberti.—p. 789.

Chronic Peritonitis.—Gilberti analyzes the clinical pictures with chronic peritonitis, especially tuberculous peritonitis, to determine whether and when operative measures are indispensable. A laparotomy is still the best weapon at our disposal to attack chronic tuberculous peritonitis. Mild cases may subside under expectant treatment alone, and surgical intervention is contraindicated in the acute form, as it may depress the general condition too much. Gatti and Gelpke insist that the tubercles must be given time to complete their histologic development before the laparotomy can have a curative action. When the tubercles show vacuolization from a dropsical tendency, the laparotomy is most likely to prove effectual. In the very far advanced cases it is liable to fail. The best outlook for it is when the ascites is free, abundant and serous, the general condition growing gradually worse. His experience with four cases given roentgen-ray treatment was discouraging, but heliotherapy in his eighteen cases often displayed striking efficacy. The respiration and circulation soon show the tonic effect, and the general condition has improved miraculously in some cases that were considered beyond operative relief.

Riforma Medica, Naples

June 4, 1921, **37**, No. 23

Arteriosclerosis of Humeral Artery. L. Torraca.—p. 530.
*Proteic Intoxication. F. Pentimalli.—p. 532.
Bradycardia from Sino-Auricular Heart Block. S. Fichera.—p. 533.
*The Leg Phenomenon with Pyramidal Disease. C. Angela.—p. 537.
Cancer After Industrial Trauma. E. Aievoli.—p. 541.
Disease of the Diaphragm Zone. I. Jacono.—p. 542.

Protein Intoxication.—In this preliminary communication Pentimalli remarks that the research on this subject has been restricted to acute protein intoxication, that is, anaphylaxis. He has been conducting research on the conditions that develop with chronic protein intoxication from prolonged, systematic parenteral administration of proteins.

Barré's Leg Sign of Pyramidal Disease.—Barré called attention to this leg phenomenon as a sign of disease of the pyramidal tracts, but Angela relates extensive experience with it which disproves this exclusive character for it. Under certain given conditions the sign is pronounced with peripheral as well as with central paralysis.

Tumori, Rome

April 28, 1921, **8**, No. 1

*Primary Sarcomas in Scar Tissue. F. Nassetti.—p. 1.
*Sarcoma in Nasal Fossa. G. Bilancioni.—p. 22.
Fibroma of External Ear. F. Putelli.—p. 42.
*Cutaneous Manifestations of Leukemia. L. Martinotti.—p. 63. Cont'd.

Sarcoma in Scar Tissue.—Nassetti comments on the rarity of sarcoma developing in scar tissue in comparison to the relative frequency of endothelioma in a cicatrix. A single trauma is more frequently found in the anamnesis of sarcoma, and continued irritation in cases of carcinoma. In a case described, the sarcoma had developed in the cicatricial tissue left after two months of suppuration in the trapezius muscle after a shell wound. In some of the cases he cites from the literature there had been chronic suppuration from a projectile in soft parts or bones, or acute or tuberculous osteomyelitis. The cases had not been followed long enough in most of them to speak of a permanent cure after excision of the growth and its bed of cicatricial tissue and adjoining glands. In several cases the patients soon succumbed to metastasis.

Sarcoma in Nasal Fossa.—The melanotic sarcoma had developed after a gunshot wound of the cheek and orbit in a woman of 53. Bilancioni reviews the history of sarcoma of the nose from Palletta's first case in 1820 to date. In his case the small sarcoma protruded from the nostril and it was successfully removed in February, 1920. Several colored plates show the microscopic findings.

Skin Manifestations in Leukemia.—Martinotti applies the term hemoblastosis to leukemic, aleukemic and leukemoid affections, and in this instalment of his monograph on the cutaneous manifestations in these conditions he discusses the chronic hyperplastic processes, lymphoid and myeloid, chloroma, etc.

Brazil-Medico, Rio de Janeiro

April 30, 1921, **35**, No. 18

Three New Trematodes. Lauro Travassos.—p. 221.
The Social Evils. A. Ricardo.—p. 223.

May 14, 1921, **35**, No. 20

*Mitral Stenosis. O. Clark.—p. 245.

Mitral Stenosis.—Clark reiterates that syphilis is predominantly responsible for aortic insufficiency, and febrile rheumatism for mitral stenosis. Acute articular rheumatism, he says, is rare in Brazil. He found only 3 per thousand cases among 3,000 schoolchildren examined. Even with pronounced mitral stenosis, if repose can be enforced, long survival is possible, as in cases of mitral stenosis of a degree apparently incompatible with life; if complicating paralysis fastens the patient to his bed, he may live twenty or thirty years longer. Auricular fibrillation in itself does not aggravate the condition in mitral stenosis, but bacterial invasion is particularly dangerous. The result often is a septic ulcerating or malignant endocarditis. In one such case the endocarditis induced in the young man hemoptysis, embolism in the popliteal artery and retina with panophthalmia and death in less than a month. Clark refers in conclusion to slow endocarditis as one of the most treacherous of all diseases. The subject is usually young and apparently in the best of health at first; the few symptoms are ascribed to some transient infection until embolism clears up the diagnosis. Eradication of every septic focus in the body is the only means to ward off these complications. Mitral stenosis is the valvular disease most frequently complicated with auricular fibrillation. He has confirmed that the latter frequently yields to large doses of digitalis according to Eggleston's method. But the digitalis has to be kept up permanently to maintain the benefit. He describes several cases of mitral stenosis with different complications.

Semana Médica, Buenos Aires

May 12, 1921, **28**, No. 19

*Syphilis of the Kidneys. C. P. Waldorp and O. Behr.—p. 537.
*The Pituitary During Pregnancy. M. L. Pérez.—p. 540.
*Suture of the Larynx. R. Landivar and H. Bogliano.—p. 549.
*Malaria and Tuberculosis. J. A. López.—p. 550.
Topographic Anatomy of the Brain. E. Amato.—p. 555.
Prostitution and Venereal Disease. L. Sirlin.—p. 556.

Syphilitic Disease of the Kidneys.—Waldorp and Behr have always found a history of syphilis when the polariscope revealed lipoids in the urine sediment. The syphilis may have been inherited or acquired, but the lipoids testified to lipoid degeneration of the kidneys. In some cases the search for lipoids in the sediment first cleared up the diagnosis, which had wavered between acute accidental nephritis and irritation of the kidneys from mercury. Lipoid necrosis may become installed after the kidneys have become degenerated from other cause, but syphilis is capable of engendering it alone.

The Pituitary During Pregnancy.—Pérez reviews the anatomy, physiology and modifications undergone by the pituitary during pregnancy, everything indicating, he says, an exaggerated functioning at this period, with hypertrophy to correspond, of the glandular portion of the hypophysis cerebri.

Suture of the Larynx.—The man of 34 had tried to commit suicide by cutting his throat with a razor, the wound in the infrahyoid region extending from one sternocleidomastoid muscle to the other. Landivar arrested the hemorrhage by clamping the superior laryngeal artery and tamponing, to allow the man to be brought to the hospital. Then all the arterioles and veins in the region were ligated separately, and the incision was sutured in four separate planes, using fine silk for the three lower planes. Morphin was injected to reduce the man's agitation and the neck was bandaged with the head bent forward. There was complete aphonia at first, and nothing was allowed by the mouth except scraps of ice. The fourth day iced milk was given. Each swallow induced a distressing cough, but this gradually wore off by the eighth day, and by the sixteenth day the man was dismissed completely recovered. The writers comment on the peculiar idea of the laity in regard to the death-dealing properties of slashing the neck with a razor, when in reality the tough cartilages and the inaccessibility of the vital arteries and spinal cord render this procedure comparatively harmless, in comparison to the actually vulnerable points in the vicinity.

Malaria and Tuberculosis.—López relates that in his experience with three generations of army recruits, he has frequently found that young men with a history of old malaria did not respond properly to quinin, and certain minor signs suggested superposed tuberculosis. Applying Vitón's tuberculin therapy with the minutest doses, supplemented with an antituberculosis vaccine, these men recovered, throwing off both the symptoms suspicious of tuberculosis and the malaria as well.

Gann, Tokyo

June, 1921, **15**, No. 2

Experimental Studies on Metastasis of Mouse Carcinoma. S. Okonogi and K. Tadenuma.—p. 7.

Archiv für Gynaekologie, Berlin

1921, **114**, No. 2

*The Death Rate of Cancer Operations. B. Schweitzer.—p. 213.
*Premature Separation of Normal Placenta. O. Frankl and V. Hiess.—p. 225.
Pathology of the Kidney During Pregnancy. R. T. von Jaschke.—p. 255.
*Gonads and Development of Sex. J. Halban.—p. 289.

*Malignant Suprarenal Tumors. E. G. Orthmann.—p. 304.
*Hydrosalpinx. B. H. Jägerroos.—p. 328.
Tuberculous Tubal Processes. J. Frise.—p. 393.
Simplified Twilight Sleep in Obstetrics. Hermstein.—p. 401.
Pemphigus Neonatorum. Bierende.—p. 411.
Unilateral Defects in Female Urogenital Tract. F. Schilling.—p. 428.
Formation of Wolffian Body, etc. F. Kermauner.—p. 438.

Improved Technic for Uterine Cancer Operations.—Schweitzer describes Zweifel's method of excluding the peritoneum completely. This method has been in constant use for ten years, and peritonitis developed in only 0.93 per cent. of the 322 cases. The primary mortality in the 281 cancers of the cervix was 5.34 per cent. There was suppuration of the wound in only 2.5 per cent. of the total cases. Through a laparotomy incision, the cancerous uterus is detached from its connections and three suture threads are passed through the apex of the bladder, and the long ends are tied temporarily to the top of the uterus. The parametrium and glands are excised, and when the uterus is thus completely free on all sides it is pushed down deep into the pelvis and the peritoneum over the bladder and pouch of Douglas is drawn up and sutured together to form a solid and impervious roof over the whole. This walls off the pelvic cavity completely, and then the cancerous uterus is easily removed through the vagina. The long threads that then hang from the top of the bladder are tied to the anterior lip of the gap left in the vaginal wall, to hold the bladder upright. A strip of iodoform gauze is packed in the supravaginal wound cavity. The gauze is removed the tenth day. The figures cited above confirm the progress realized by this technic. The vagina is not opened until the pelvis has been solidly roofed over and hence peritonitis and pyelonephritis do not get a chance to develop. The sutures holding up the bladder facilitate spontaneous urination from the start, and hold the bladder up out of the way; otherwise it sags into the space left by the hysterectomy. There was no trace of peritonitis in one series of 159 cases.

Premature Separation of Normally Located Placenta.—In the 34 cases of this kind in Frankl and Hiess' experience, 19 of the women had albuminuria, including 6 with signs of severe pregnancy intoxication, with a tendency to convulsions in 3. In the others, pregnancy nephritis was evident in 11. In 2 in this group there was preexisting kidney disease. In the 9 uteri examined postmortem, the placenta and uterus showed nothing pathologic otherwise. The negative results of their research suggest that purely mechanical factors are involved. Anything inducing sudden overfilling of the spongiosa vessels is liable to pry off the placenta from the wall. In their 16 mild cases, there was no mortality among the mothers, and 13 children were born alive, but all the children died in the 18 severe cases, and 9 of the mothers. With purely internal hemorrhage the diagnosis is not always easy. Rupture of the uterus or of the twisted pedicle of a cyst may be suspected, or a ruptured extra-uterine pregnancy. The uterus is found contracted, while it relaxes with rupture. Expectant treatment is justified with slight hemorrhage from separation of the edges. With severe internal bleeding, none of the usual measures have a chance to be effectual, and the uterus must be emptied at once. In emergencies, the inflatable bag can be used, although this exposes to danger that it may increase the pressure in the uterus to actual rupture. The bag must be weighted, and the os may have to be additionally enlarged by discission to allow forceps or version, craniotomy of the dead fetus, forceps for the living, or cesarean section. By the vaginal route the latter is less of a strain for the organism, but the danger of rupture and the difficulty of its recognition turn the scale in favor of abdominal cesarean section.

The Gonads and Development of Sex.—Halban presents an array of arguments to prove that the gonads in both sexes produce a qualitatively identical substance which has a protective and promoting action on the supply of sex characters that happen to be present in the individual. During pregnancy, he theorizes, the placenta takes up the task of the ovaries and carries it on intensified. His theory presupposes that in the fecundated ovum not only the sex is determined but the primary and secondary sex characters are already outlined. His arguments tend to prove Steinach's theories untenable.

Malignant Suprarenal Tumors.—Orthmann analyzes the records of 147 operative cases and 140 found in cadavers. Of this total 286 cases, 66 were carcinomas, 55 sarcomas, and 115 hypernephromas. Male subjects predominated (162 to 123 women in the operative cases and 84 to 54 in the others). The youngest patient was a girl of 16, the oldest a woman of 89; the majority were between 40 and 60. This analysis is followed by a minute description of a case in a woman of 42 who has been in good health since the removal of the malignant tumor in the kidney over a year ago. No trace of any suprarenal glands on that side were found at the operation; the tumor evidently represented the relics of the aberrant suprarenal tissue in the kidney.

Hydrosalpinx.—Jägerroos' long study of the etiology, pathologic anatomy, pathogenesis and the clinical aspect of hydrosalpinx is based on 100 cases and 58 anatomic specimens, and on the literature. In 70 operative cases recently reexamined, the outcome has been gratifying in 45 salpingotomy cases. In 5 others there are still subjective disturbances. In another group of 3 there are both subjective and objective symptoms; in one they are restricted to the other side. In 14 salpingostomy cases the results have been perfect. In 2 others the adnexa have become enlarged again.

Deutsches Archiv für klinische Medizin, Leipzig

June 7, 1921, **136**, No. 3-4

*Streptothrichosis of the Lung. H. Lenhartz.—p. 129.
*Splenectomy with Aplastic Anemia. H. Gorke.—p. 143.
Electrocardiogram with Brief Contractions. Mandelbaum.—p. 154.
Changes in Leukocytes After Infusion. L. Nürnberger.—p. 159.
*Edema of Extrarenal Origin. Nonnenbruch.—p. 170.
*Action of Quinidin on the Heart. E. Boden and P. Neukirch.—p. 181.
*Connective Tissue in Cure of Cancer. M. Fraenkel.—p. 192.
*Sino-Auricular Block. E. Edens.—p. 207.
*Rare Form of Anemia. W. Knoll.—p. 237.

Streptothrichosis of the Lung.—Lenhartz' case is one of the few instances of recovery from streptothricosis of the lung. The symptoms in the man of 33, a coachman, had been those of croupous pneumonia of the lower lobe at first, but their persistence pointed to tuberculosis. There was continuous fever at 39 C. (102.2 F.) for the first eight weeks; then it became intermittent. After numerous negative punctures, pus was obtained and pure cultures of the streptothrix were obtained on anaerobic cultivation, and from the ascitic fluid of animals inoculated with it. The progressive course compelled active intervention, and the ninth rib was resected in the axillary line. The mycosis subsided completely after the evacuation of ¾ liter of pus containing the fungus in abundance. The man succumbed a few weeks later to erysipelas of the larynx and face, and necropsy confirmed the complete cure of the mycosis.

Aplastic Anemia.—Gorke removed the spleen in a case of aplastic anemia in a previously healthy butcher of 53. He hoped by this means to stimulate the blood-producing organs, but the man died the same day. In three similar cases on record, the patients died in a few hours after the splenectomy. The slight destruction of hemoglobin, as evidenced by the lack of urobilin in the stools; the small proportion of pigment in the bile; the epinephrin test, and the catalase index are useful in the differential diagnosis of aplastic anemia. In conclusion he tabulates the features that distinguish aplastic and pernicious anemia from each other and from purpura.

Edema of Extrarenal Origin.—Nonnenbruch found the blood extremely concentrated in three patients with kidney disease and edema. In three other cases even copious ingestion of water, with scanty diuresis, did not dilute the blood but seemed rather to render it even more concentrated.

Action of Quinidin.—Boden and Neukirch report constant success with quinidin in treating extrasystolia and paroxysmal tachycardia. With absolute arrhythmia they found the action uncertain; in seventeen cases only seven were restored by it to normal rhythm, and this only transiently. They describe research with it on the isolated rabbit and fetal heart, and compare the findings with those of others.

New Factors in the Fight Against Cancer.—Fraenkel hails as new factors the attempt to use the roentgen rays to enhance the defensive forces of the body rather than to annihilate the cancer directly, and especially Ribbert's obser-

vation of the spontaneous destruction of cancer cells under the influence of lymphocytes. Cancer cells seem to be susceptible to the action of toxins liberated by the destruction of lymphocytes, and we know that radiotherapy is influential in increasing production of lymphocytes and also in their destruction. Radiotherapy therefore should not be restricted to attacking the cancer, but should be applied to stimulate the defensive forces, and chief among these the connective tissue. Embryology and study of callus, scars, etc., show that this is far more than a mere supporting tissue. It is not strong enough however to stop the encroachment of the cancer. Our task is to strengthen and reenforce the connective tissue, and this we can accomplish, he reiterates, by the stimulating dose of roentgen rays. Gynecologic cancer is most admirably located for this as the connective tissue and the endocrine glands here are in the most favorable relations for the rays to be effectual in this respect. The endocrine ovaries, with their intimate connection with the thyroid, thymus and suprarenals, are stimulated by the roentgen exposures, as also the connective tissue in the region. This explains the success with uterine cancer in contrast to what has been realized to date with other cancers, the mammary, for example. We must attack cancer by promoting endocrine functioning and by stimulating the connective tissue by direct raying and, indirectly, by raying the thymus. His experimental research has demonstrated the special relations between the thymus and the connective tissue. He even includes the connective tissue in the endocrine system. Its close connection with this system is apparent in its dependence on the different phases of development of the thyroid and the thymus, as is evident in various constitutional affections, in senile processes, and in the effects of radiotherapy. Keysser's research has demonstrated that even the highest doses of the rays are not able to kill cancer cells absolutely. In the cases of cancer cured by radiotherapy, the effect, Fraenkel declares, was due not to destruction of the cancer, as has been assumed hitherto, but to stimulation of the defensive forces.

Sino-Auricular Heart Block.—Eden's study of the atrioventricular automatism is accompanied by thirty electrocardiograms of a number of cases under the influence of various drugs.

Rare Form of Anemia.—Knoll reports the case of a boy of 9 with the inguinal glands showing dark blue through the skin, and large spindle-shaped cells in the blood as also macroblasts with nucleoles. The blood findings are shown in a colored plate.

Deutsche medizinische Wochenschrift, Berlin

June 2, 1921, **47**, No. 22

The Functional Properties of Vitamins. E. Bürgi.—p. 613.
*Experimental Foot-and-Mouth Disease. M. Hobmaier.—p. 616.
Effect of Poisons on Body Spirochetes. L. Dub.—p. 618.
Arsphenamin Dosage. K. Biele.—p. 619.
Parallel Serologic Tests. W. Weisbach.—p. 620.
Artificial Virulence in Relation to Chemistry. H. Much.—p. 621.
Complications of Appendicitis. Kümmell.—p. 622. Conc'n.
Localization of Abdominal Pain. F. Brüning.—p. 624.
*Leukocytes in Inflammation. E. Unger and A. Wisotzki.—p. 625.
Artificial Pneumothorax in Pneumonia. H. Burckhardt.—p. 625.
Postoperative, Paradoxic Embolism in Systemic Circulation with Open Foramen Ovale. R. Hensel.—p. 625.
Treatment of Polyneuritis. Rubens.—p. 626.
*Effect of Antivenereal Prophylactics. J. Schumacher.—p. 626.
*Recurrence in Infantile Gonorrhea. I. E. Valentin.—p. 628.
Present State of Knowledge of Heart Failure. Hering.—p. 630.
Children Who Do Not Seem to Thrive. L. Langstein.—p. 632.

Susceptibility of Small Experimental Animals to Foot-and-Mouth Disease.—Hobmaier states on the basis of his investigations that the virus of foot-and-mouth disease is always infectious for guinea-pigs. Some of the strains produce foot blisters; others only the abortive type of foot-and-mouth disease. The virus can be cultivated through only a limited number of generations in the body of guinea-pigs. The incubation period is usually from two to three days; but it may be a week or even longer. Not only guinea-pigs but also rabbits, rats and chickens are susceptible to foot-and-mouth disease, sometimes evidencing the acute and sometimes the abortive form. The skin nodules that arise following intracutaneous inoculation of guinea-pigs, rabbits and rats with virulent strains contain the living virus of foot-and-mouth disease. Guinea-pigs inoculated with the virus develop a general infection with eruption of vesicles on the feet. Therapeutic serums and, to a not much less extent, normal serums exert an inhibitive effect on the development of the disease in guinea-pigs. This finds expression in the lengthening of the incubation period and diminution or suppression of vesicle formation.

Distribution of Leukocytes in the Blood in Inflammatory Processes.—Unger and Wisotzki have been investigating in connection with the increase of leukocytes in the blood in inflammatory processes whether the increase affects the whole vascular system alike or whether the distribution is unequal. They arrived at the interesting conclusion that in man the vessel leading to an inflammatory focus, the arterial blood, contains more leukocytes than the efferent vein. Leukocytes are held back at the site of the inflammation. Fewer white corpuscles leave the inflammatory focus than are carried to it. The capillary blood contains even fewer leukocytes than the vein.

Effect of Antivenereal Prophylactics.—Schumacher says that Metchnikoff's calomel ointment has been universally condemned as having no prophylactic value against syphilis. The Neisser-Siebert preparation is a good prophylactic if it is fresh, but in metal tubes, in which it has been frequently dispensed, it deteriorates rapidly. It should be put up in porcelain or glass tubes. Schereschewsky's quinin ointment keeps well in metal tubes and is effective. All investigators are agreed that solutions are more effective than ointments. A 0.1 per cent. solution of mercuric chlorid in the hands of those who know how to use it gives good results. After coition the urethral orifice should be cleansed with a cotton swab dipped in the solution. As prophylactics against gonorrhea the various silver preparations such as protargol are satisfactory. Solutions are better than ointments here as well. There is great danger of stricture of the urethral orifice if strong solutions of protargol (from 10 to 20 per cent.) are used. Much weaker solutions will have the desired prophylactic effect, and even then strictures will occasionally result. One objection to the silver preparations in watery solutions is that they are not stable. Schumacher thinks that this is one very good reason why one preparation may be well recommended to serve as a prophylactic against both syphilis and gonorrhea. He thinks that if a 0.1 per cent. solution of mercuric chlorid is used against syphilis, and the urethral orifice is carefully cleansed with the little finger dipped in the solution, or a cotton wrapped match, it will protect against gonorrhea as well.

Causes of Recurrences in Infantile Gonorrhea.—Valentin relates her experiences in the treatment of 161 cases of infantile gonorrhea. After from two to four weeks' treatment the course was suspended if the tests for gonococci were negative, but in almost all of the cases examined after several weeks or months there was a renewed discharge which was found to contain gonococci. The same treatment as the first time caused the discharge to cease and the gonococci to disappear in from four to eight weeks. If the treatment was interrupted, recurrences again set in. Some children had three or more recurrences, requiring them to be kept at the station for more than a year. The cause for the many recurrences she finds in the fact that gonococci in the glands or neighboring organs were not easily accessible to the treatment. In 61 of the children in whom recurrences occurred, gonococci were found to persist in the rectum.

Monatsschrift f. Geb. u. Gynäkologie, Berlin

May, 1921, **54**, No. 5

*The Placenta in Therapeutics. H. Guggisberg.—p. 277. Idem. E. Puppel.—p. 280. Idem. E. Martin.—p. 288.
*Myoma and Pregnancy. F. Heimann.—p. 292.
*Primary Chancre in Vaginal Portion of Uterus. B. Liegner.—p. 298.
*Typhoid Peritonitis. J. Richter and J. Amreich.—p. 300.
*Diathermia in Gynecology. Sperling.—p. 309.
*Radiotherapy of Peritoneal and Genital Tuberculosis. S. Stephan.—p. 314.

Placenta Extract as Oxytocic.—Guggisberg reported as long ago as 1913 that certain organ extracts, especially the placenta and the thyroid, contain substances which promote

the contractions of the uterus. The extract freshly derived from placenta tissue does not seem to possess any toxic action. It is probably, he says, some proteogenous amin that exerts this nonspecific action on nonstriated muscle. He here reports further experiences with it, and its more effectual action when combined with pituitary extract.

Myoma and Pregnancy.—Heimann illustrates the varying clinical pictures that may be presented and the indications with each, as evidenced in three clinical cases. In the first, a huge myoma was discovered in the uterine cervix at the fifth month of pregnancy, and at term the woman was delivered by cesarean section of a normal child. She succumbed a few days later to postoperative pneumonia. In the second case a cluster of myomas interfered with the development of the fetus, and the pregnancy was terminated by supravaginal amputation at the third month. In the third case there was nothing to prevent the large myoma being treated conservatively, with normal delivery at term.

Primary Syphilitic Chancre on Vaginal Portion of Uterus.—Liegner cites Fuchs' discovery of the spirochetes of syphilis in the uterine cervix of women whose husbands presented contagious syphilitic manifestations, and this before the women showed any indications of the disease except the positive Wassermann reaction. This proved that the spirochetes were not from casual contamination. Liegner reports a similar case from his own experience. The diagnosis wavered between syphilis, tuberculosis and cancer. The hard edge of the process and the sudden development of severe symptoms, beginning with hemorrhage confirmed its syphilitic nature. The young woman had been sent to the hospital with the diagnosis of abortion, but there were no signs of pregnancy. No spirochetes could be found, but before the Wassermann test was completed, extensive and severe secondary manifestations of syphilis appeared along with the primary lesion. The Wassermann reaction is liable to be negative at this early stage, and the diagnosis may be very puzzling.

Typhoid Peritonitis.—In the case here reported the peritonitis developed after the rupture of an ovarian dermoid cyst which had been infected with typhoid bacilli and had suppurated. No adhesions developed later. The writers ascribe this to the fat contained in the dermoid cyst which protected the tissues against adhesion.

Diathermia in Gynecology.—Sperling states that a subjective cure was attained in 56.5 per cent. of the 110 gynecologic cases in which diathermia was applied, and improvement in 43.5 per cent. The relief of pain was the most striking effect and the promptest, both in the cases with and without inflammatory processes in the adnexa or connective tissue. It seldom failed to relieve, and then only in old chronic cases or in older women with hard and adherent processes. Even in these apparently rebellious cases, the desired result was sometimes obtained with persistent application, the lesions subsiding finally. In one case this required seventeen sittings. Recent cases are treated only with injection of turpentine.

Roentgen-Ray Treatment of Peritoneal and Genital Tuberculosis.—Stephan expatiates on the excellent results attainable with radiotherapy in all cases of tuberculous peritonitis with extensive adhesions but without ascites, irrespective of whether the genital organs are involved or not. Attempts at operative intervention generally give deplorable results. He also applies radiotherapy in the cases in which operative measures are refused, or it is not practicable for any reason. He applies roentgen-ray treatment further after the exploratory laparotomy in the miliary form with ascites. By releasing the fluid the conditions are improved for the radiotherapy, and the adnexa can be inspected better after the fluid has been drained off. If the serous membrane alone is involved, he exposes the entire abdomen from front and back, exclusive of the small pelvis. By this means the genital organs are spared the castrating dose. Even when the adnexa are involved, he tries to save at least one functioning ovary in young women. For these and other reasons an exploratory laparotomy is of great advantage, and the ovary to be left is carefully protected against the rays. He describes an instructive case which encourages to apply radiotherapy in this form even in quite recent, acute cases of peritoneal and genital tuberculosis.

Münchener medizinische Wochenschrift, Munich

May 27, 1921, **68**, No. 21

Attempt at a Uniform Explanation of Manifestations of Paralysis in Infantile Cerebral Hemiplegia. G. Eversbusch.—p. 627.
Volatile Oils and Their Practical Value. Heinz.—p. 628.
Antiseptic Treatment of Infected Wounds. J. Finger.—p. 631.
Thrush Fungus in Gastric Ulcers. Meyenburg.—p. 633.
Conservative Treatment of Streptococcus Abortions. Neu.—p. 634.
Suggestion and Hypnotism in General Practice. Hattingberg.—p. 635.
Births During Modified Twilight Sleep. K. J. Wederhake.—p. 637.
Symptomatology and Treatment of Hypernephroma. Thierry.—p. 638.
Abortive Cure of Primary Syphilis. Spiethoff.—p. 640.
Exact Diagnosis of Duodenal Ulcer. H. Lorenz.—p. 640.
Expulsion Mechanism in Narrow Pubic Arch. P. Mathes.—p. 641.
Apparatus for Lateral Roentgenoscopy of Stomach. H. Cramer.—p. 641.
*Treatment of Surgical Tuberculosis. F. König.—p. 642.
Accumulation of Iodin in Carcinoma Tissue. G. Riehl.—p. 644.
Indications for Intubation. F. Hamburger.—p. 644.
Treatment of Incarcerated Hernia. E. Stark.—p. 644.
Friedmann's Tuberculosis Treatment. L. Zschau.—p. 644.
Technic of Punctures. Michael.—p. 644.
Treatment of Cerebral Apoplexy. R. Geigel.—p. 645.

Treatment of Surgical Tuberculosis.—König warns against trusting too blindly to conservative treatment of bone, joint and gland tuberculous processes outside of well equipped institutions, saying that the results reported by Bier are something like an experiment on human beings as the ultimate outcome is not known yet. König has investigated recently 1,932 cases of resection reported from twenty different sources five, ten, twenty or more years ago, and has found that, although these were the gravest kinds of tuberculous processes, 68 per cent. have been permanently cured to date. Bier replies to this that he has also seen many of these "permanently cured" cases, and that it would be better to call them "permanently crippled" cases. Conservative measures such as he has found effectual heal without crippling, and reach foci inaccessible to surgery. In conclusion he adds to his previous directions that persons taking sun and air baths must be protected against wind. Only on the very hottest days is a fresh breeze desirable for them. (Bier's work was summarized last week, p. 329.)

Wiener klinische Wochenschrift, Vienna

May 26, 1921, **34**, No. 21

Etiology of Herpes Febrilis. Luger and Lauda.—p. 251.
Tuberculosis of Palmar Aponeurosis Simulating Dupuytren's Finger Contracture. A. Exner.—p. 252.
Nontuberculous Caries of Bones. Hamburger and Erlacher.—p. 253.
Serologic Aspects of Syphilis. Epstein and Paul.—p. 254.
*Arsphenamin Treatment in Gangrene of Lung. B. Molnár.—p. 255.

Arsphenamin Treatment in Gangrene of Lung.—Molnár states that in the hospitals of Berlin, during the period from 1897 to 1900, out of 133 cases of gangrene of the lung only 7.5 per cent. were cured, whereas 64.6 per cent. of the patients died. Of late years Becker has recommended arsphenamin treatment. His results are said to have been strikingly good. Molnár's experience with arsphenamin treatment confirms early favorable reports. In two of his cases the condition had existed only for a week or two; a cure was promptly effected. In one case of a month's standing it required two months' treatment and six neo-arsphenamin injections to bring about a recovery. The fever disappeared after the second injection, but the sputum retained its bad odor until after the fourth injection. The quantity of sputum decreased but slowly. In a case six weeks old four injections (0.30 and three times 0.45 gm.) brought some improvement, but in two cases of eleven and twelve months' standing, neo-arsphenamin could not be seen to have any effect. In recent cases, therefore, arsphenamin treatment should be employed at once without experimenting with other remedies. The etiology of gangrene of the lung and of putrid bronchitis is not known. Fusiform bacilli and spirochetes are doubtless important factors, but there is probably no single causative agent.

Zentralblatt für Chirurgie, Leipzig

May 28, 1921, **48**, No. 21

*Experiences with Parasacral Anesthesia. E. Staffel.—p. 729.
*Retention of Urine After Operations. Pólya.—p. 732.

Experiences with Parasacral Anesthesia.—Staffel reports from the Krankenstift Zwickau the results accomplished with Braun's parasacral anesthesia in the 413 cases in which it was employed during the last nine years. Since 1912 it has

been the preferred form of anesthesia in all perineal and vaginal operations, uterus extirpations, operations for prolapsed uterus, plastic operations on the vagina and perineum, urethrotomy, and operations for cancer of the rectum. In only 18 cases the sacral plexus was not entirely blocked. No untoward by or after effects were observed in any case. There were 65 cases of cancer of the rectum, in which general anesthesia was employed in 8 instances, lumbar anesthesia in one and parasacral anesthesia in 56. In 2 cases parasacral anesthesia failed entirely, and in 3 other cases general narcosis had to be employed to help out. Patients operated on under parasacral anesthesia leave the operating table in much better condition than those operated on under general anesthesia. As a rule, one would not suspect from their appearance that they had undergone a serious operation.

Prevention of Retention of Urine Following Operations.—Pólya, having repeatedly observed that after hernia operations and operations for hemorrhoids, rectal fissures and fistulas, a catheter had to be employed very commonly for several days after the operation, hit upon the plan of training patients in advance of the operation to pass urine in bed while in a recumbent position, preferably while lying on the back. It was a difficult matter for some at first, but the trick of it was usually learned in a day or two. Since this method has been employed, out of thirty-one patients (twenty-nine men, two women) operated on for inguinal hernia only one (a man) has been catheterized, and that only once. In a large percentage of other cases catheterization could be thus avoided.

Zentralblatt für Gynäkolgie, Leipzig

May 28, 1921, **45**, No. 21

Extraction of After-Coming Head of Dead Fetus. E. Sachs.—p. 742.
*Undernutrition and Fat Content of Human Milk. C. Pasch.—p. 744.
*Conjunctivitis in Babe and Puerperal Mastitis. E. Lang.—p. 750.
Annular Bidiscoidal Placenta. J. Schiffmann.—p. 754.
Recurring Retroperitoneal Fibromyxoma. B. Schwarz.—p. 760.

Effect of Undernutrition on the Fat Content of Human Milk.—Pasch states after prolonged investigation that undernutrition, if only moderate, does not produce a diminution of the butter fat in human milk, provided the mother is in fairly good health. This finding agrees with that of Vollhase and Stau who reported that the fat content of unadulterated cow's milk during the war remained unchanged. Kirchner also found that cow feed that was below par as regards nutrients affected the fat content only slightly, although it did affect the quantity of the flow.

Conjunctivitis of the New-Born in Relation to Puerperal Mastitis.—Lang has been carrying on a series of investigations in the Brandenburg Midwives' Training School in connection with Feilchenfeld's communication at the 1920 gynecologic congress that there was a close causal connection between conjunctivitis in the new-born and puerperal mastitis, which rendered prophylactic measures imperative. In 455 parturients during the months of January and February, 1921, he found only six cases of mastitis, or 1.06 per cent., which corresponds in a general way to the statements of other writers, who report from 0.54 to 1.93 per cent. There was thus no increase in mastitis as Feilchenfeld had maintained. Not a single mother whose child had conjunctivitis presented mastitis, nor did he find any bacteria in the conjunctival sac of children whose mothers were suffering from mastitis. However, he did find that conjunctivitis among the new-born was more common than usual.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

May 14, 1921, **1**, No. 20

*Obstetric Version. G. C. Nijhoff.—p. 2652.
*Snapping Finger. W. P. J. Hoogveld.—p. 2663.
The Function of the Otoliths. F. H. Quix.—p. 2670.
Pituitrin in Obstetrics. P. Timmers.—p. 2674.
*Hunger Strike in Prisons. S. van Mesdag.—p. 2675.
The Tetrahedric Chest. K. A. Rombach.—p. 2677.
Abscess Traced to Helminths. F. M. G. de Feyfer.—p. 2678.

Obstetric Version.—Nijhoff tells of Irving W. Potter's systematic use of version in 1,200 obstetric cases, and reviews his arguments. Certain features of Potter's technic Nijhoff regards as progress, particularly his insisting that both feet should be drawn down, and that the arms should not be delivered until after the scapulae have passed the pubis, and then the foremost arm first. He is careful to insure that the fetal membranes are separate from the uterine wall, and warns that a man with a big forearm has no right to attempt to put it in a birth canal. Nijhoff comments that some of these features of Potter's technic are very old but have been forgotten so long that they seem new. The most impressive element of his technic is the tranquil way in which all proceeds, from the knowledge that the child always has a chance to breathe. Nijhoff prefers hooking the mouth with two fingers or similar maneuver rather than applying forceps.

Snapping Finger.—In a case of snapping finger of the right hand, a portion of the flexor tendon was found enlarged and tender. All disturbances ceased at once when the tendon sheath was incised and the strain on the overlarge portion released. The sheath was not sutured, but subcutaneous fat tissue was sutured over the cleft.

To Arrest Hunger Strike.—Mesdag tells of a simple means to conquer a hunger strike in a prison. He allows no food except milk, and does not allow any water in the cell except water for washing, and this is all made soapy before it is brought in. The hunger striker intends to refuse food, but does not count on having nothing to drink. This soon overcomes his resistance. Mesdag has never known this to fail in several years of experience with this method, while it never has done harm. He has had no experience with it in treatment of the insane who refuse food, and has never applied it other than to healthy prisoners.

Hygiea, Stockholm

June 16, 1921, **83**, No. 11

*Weight During Treatment for Syphilis. J. Almkvist.—p. 353.
*Lagging of Chest in Respiration. C. E. Waller.—p. 367.

Changes in Weight During Treatment for Syphilis.—Almkvist records the weight twice a week of all syphilitics taking treatment. This has shown that the weight generally declines under mercurial treatment and increases under arsphenamin. This loss of weight under mercury may be the only sign of toxic action from the drug, but he thinks that it must be regarded as indicating intoxication. Some persons lost weight under doses as small as 5 cg. of mercury salicylate, while others bore up to 20 or 25 cg. It seems wise to counteract the decline in weight with extra-nourishing food and means to stimulate the appetite, reducing the dose of mercury if the other measures are not promptly effectual, striving however to keep the doses as large as is practicable without toxic action.

Lagging Half of Chest.—Waller applies the term retardatio medica to the condition in which one side of the chest lags behind in the respiratory movements. This is often an important symptom, but it is seldom heeded. It can be rendered very prominent by holding a spirit level or its equivalent against the front wall of the chest. In the normal, both halves of the chest expand symmetrically.

Ugeskrift for Læger, Copenhagen

June 16, 1921, **83**, No. 24

*Tests of Motor Function of the Stomach. A. Als-Nielsen.—p. 805.

Tests of Motor Function of the Stomach.—Ten men and eleven women with normal stomachs were examined with the roentgen rays to determine the exact time when the stomach contents passed into the intestine. Then one or more of the five principal test meals were applied to 159 patients with various stomach or bowel derangement, and the findings are compared with each other and with the roentgen findings. It was found repeatedly that apparently normal findings with one of these methods of investigation were contradicted by the abnormal response to other tests. In 22 per cent. of fifty-one patients, the contrast meal left the stomach in three and a half hours, while the Bourget-Faber test meal showed retention of over twelve hours. The majority in this group seemed to have gastritis. The various groups studied show that, on the whole, roentgen examination of the motor functioning may advantageously substitute the Bourget-Faber test meal. It should always supplement roentgen examination for other purposes.